ALL ABOUT HISTORY

NEW

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The story of Germany's deadly WWI fighter ace



SHAKESPEARE: LOVE & LUST

The inspiration behind some of the greatest romance stories ever written

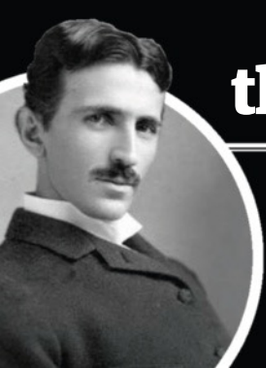
SECRETS OF THE AZTECS
The technology underpinning the great civilisation

10 of history's bloodiest battles



MANDELA'S REVOLUTION

One man's 40-year fight against the apartheid laws that divided a nation



Inspirational inventors
Meet 10 of the world's most innovative thinkers

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The fall of Baghdad
An eyewitness account of the toppling of a dictator





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14 DAYS RETURN GUARANTEE

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The young Mandela led the fight against apartheid by forming an underground militant organisation. **Page 48**

Welcome

It's quite rare for a person to be so synonymous with a place that they are the first thing that springs to mind whenever their country is mentioned. However, such is the case with Nelson Mandela. Other nations, of course, have figures that are closely associated with them: Britain has Churchill, The United States have Lincoln and so on, but none of them are quite as front-and-centre as Mandela is for South Africa.

For much of his life, however, Mandela felt a genuine disconnect from his country, a country that passed increasingly discriminatory laws that judged someone purely by the colour of their skin. This racial segregation drove him from peaceful protestor to a radicalised militant leader. To read about this transformation, check out our cover feature on page 48.

Our seventh issue – where has the time gone? – also features an eyewitness account of the fall of Baghdad during the second Gulf War on page 42 and we go inside history on page 24 to look at Stephenson's Rocket, a train that revolutionised transport.

Elsewhere in this issue two readers share with us their amazing family stories and photos. Turn to page 94 to delve into their past and remember to get in touch if you want to feature on these pages and potentially win a prize for the section's best story.



Andrew Brown
Editor

This issue's highlights



What if...
If Germany had won the Battle of Britain, Hitler would probably have proceeded to invade the island nation and it could have led to Nazi world domination.



Bluffer's guide
Get the essential lowdown on the structure and tactics of Genghis Khan's Mongolian army, which conquered most of Asia, the Middle East and parts of Eastern Europe.



Chernobyl disaster
A seemingly routine safety test at Chernobyl, one of Europe's largest nuclear power stations, led to a disaster that played a part in the fall of the Soviet Union.

© Mary Evans Alamy

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CONTENTS

Welcome to All About History

COVER STORY

48 Mandela's revolution
The story of how the injustice of apartheid changed one man from peaceful protestor to underground military leader and, eventually, South Africa's symbol of hope

INVENTION

12 The ideas that have sprung from the minds of history's most inventive men and women have changed the world

14 Hall of fame
10 of history's most brilliant and inspirational inventors

16 Day in the life
A Model-T Ford factory worker's day on the world's first automobile production line

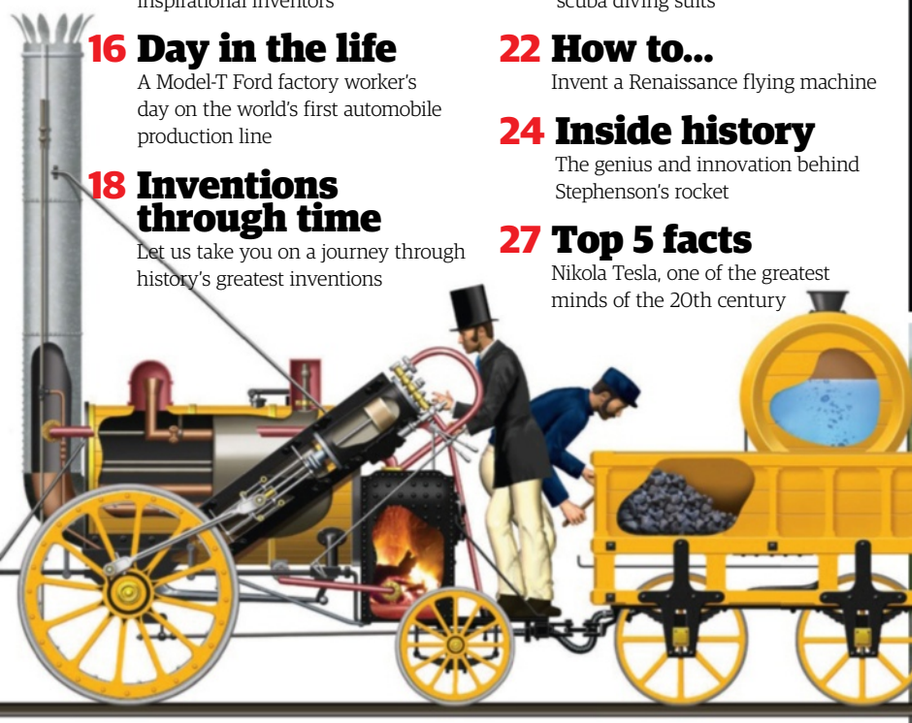
18 Inventions through time
Let us take you on a journey through history's greatest inventions

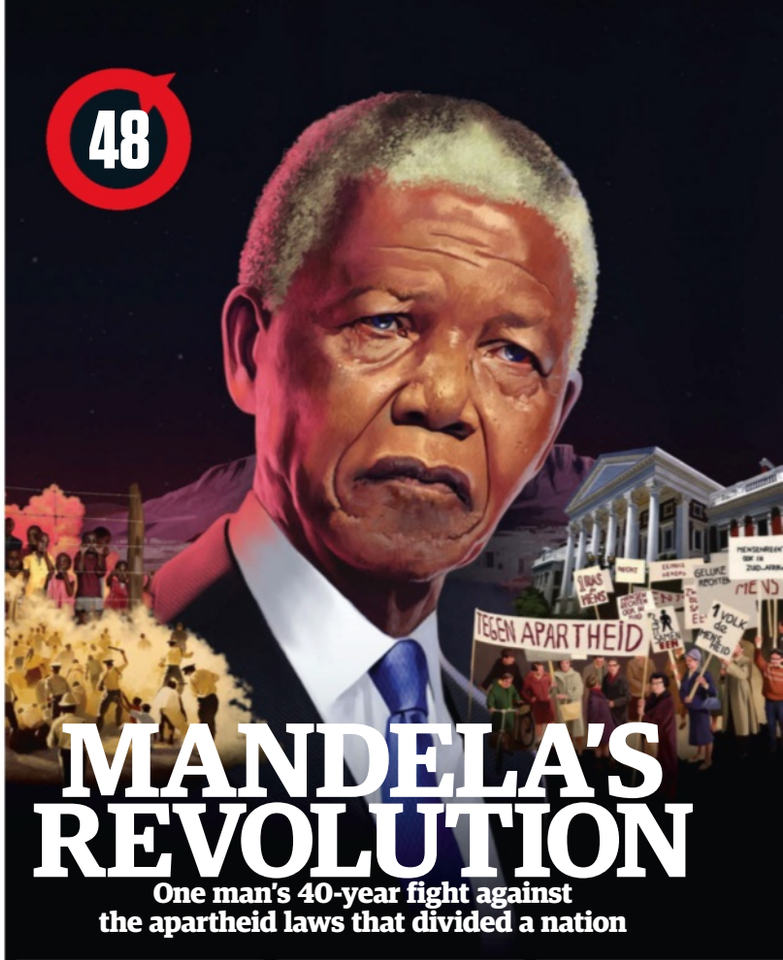
20 Anatomy of...
One of the world's first workable scuba diving suits

22 How to...
Invent a Renaissance flying machine

24 Inside history
The genius and innovation behind Stephenson's rocket

27 Top 5 facts
Nikola Tesla, one of the greatest minds of the 20th century





MANDELA'S REVOLUTION

One man's 40-year fight against the apartheid laws that divided a nation











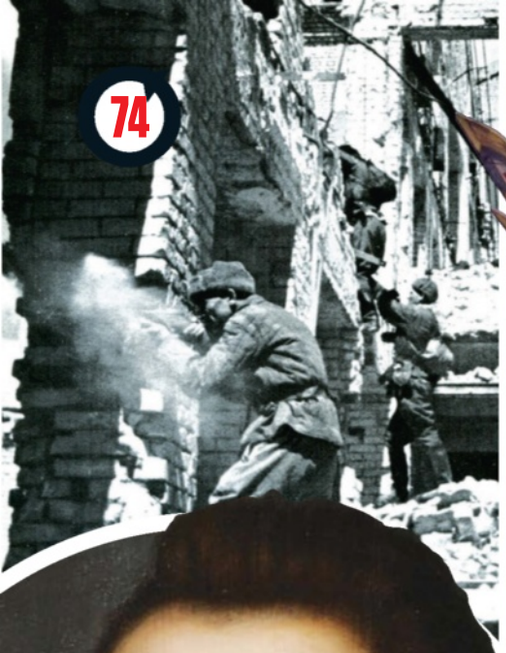
FEATURES

60 Shakespeare's love and lust
What the Bard's works reveal about his views on matters of the heart

66 Secrets of the Aztecs
Discover how the Aztecs constructed a capital city that floated on water

74 History's bloodiest battles
10 of the most gruesome battles in history, from ancient Greece to WWII

84 Chernobyl
How a routine safety procedure led to the 20th-century's worst nuclear accident













EVERY ISSUE

06 Defining moments
Images that perfectly capture a moment in time

30 What was it like?
A look at life in artist-friendly Florence in the year 1475

32 Heroes & villains
Do you remember Manfred von Richthofen? What if we say: "The Red Baron"? Thought so

36 Tour guide
Take a tour through the historical medina district in Marrakesh

38 What if...
The Luftwaffe had emerged victorious over the RAF in the Battle of Britain?

42 Eye witness
Journalist Åsne Seierstad was in Baghdad during the second Gulf War and witnessed the US invasion and the famous toppling of Saddam Hussein's statue

46 Bluffer's guide
Essential information on one of the greatest and most fearsome armies the world has ever known: Genghis Kahn's Mongolian horde

91 Competition
Win a fantastic and varied collection of history books

92 Reviews
Our roundup of the latest history products to hit the shelves

94 Your history
See what discoveries of their past readers have shared with us

98 History vs Hollywood
Is *The King's Speech* historically accurate or only a stuttering success?

ALL ABOUT YOUR HISTORY

Page 94

Photos | Letters | Your Stories

ENJOYED ALL ABOUT HISTORY? GET 3 MORE FOR £5 Page 28





DEFINING MOMENT

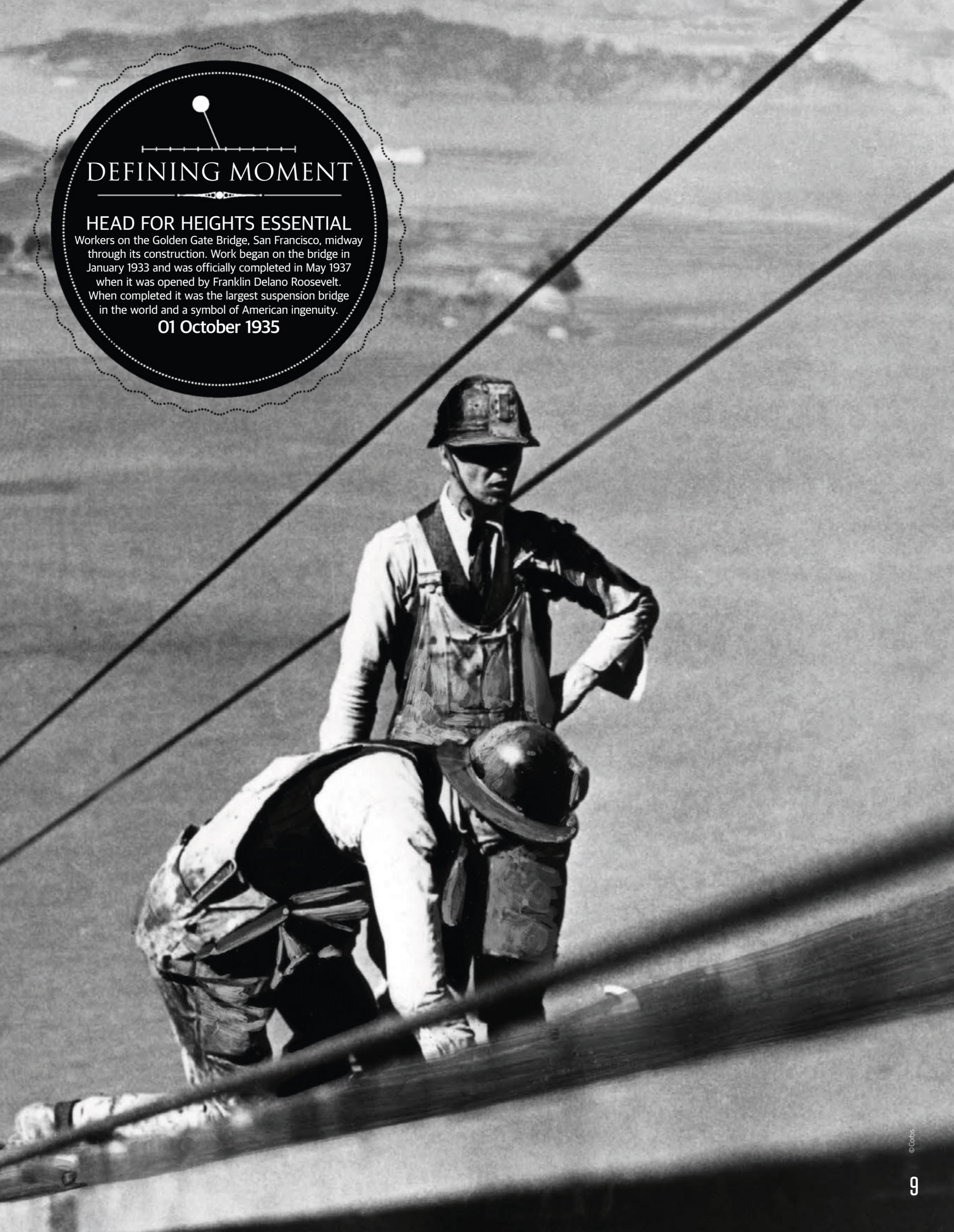
BRITAIN STOPS FOR TWO MINUTES

Brokers and underwriters line the balconies and escalators of the Lloyd's of London building to observe a two-minute Armistice Day silence in memory of Britain's war dead. The service is observed with the ringing of the Lutine Bell and the laying of wreaths before the Book of Remembrance in addition to the silence.

11 November 2010

© Corbis





DEFINING MOMENT

HEAD FOR HEIGHTS ESSENTIAL

Workers on the Golden Gate Bridge, San Francisco, midway through its construction. Work began on the bridge in January 1933 and was officially completed in May 1937 when it was opened by Franklin Delano Roosevelt. When completed it was the largest suspension bridge in the world and a symbol of American ingenuity.

01 October 1935

© Corbis





DEFINING MOMENT

TRAGEDY AT IMOLA

Triple Formula 1 world champion Ayrton Senna's Williams car crashes during the San Marino Grand Prix in Imola, Italy. During the previous day's qualifying, Austrian rookie Roland Ratzenberger was killed and serious concerns had been raised over the drivers' safety. Senna died of his injuries in hospital and motor racing began to wake up to the need for better safety precautions.

01 May 1994

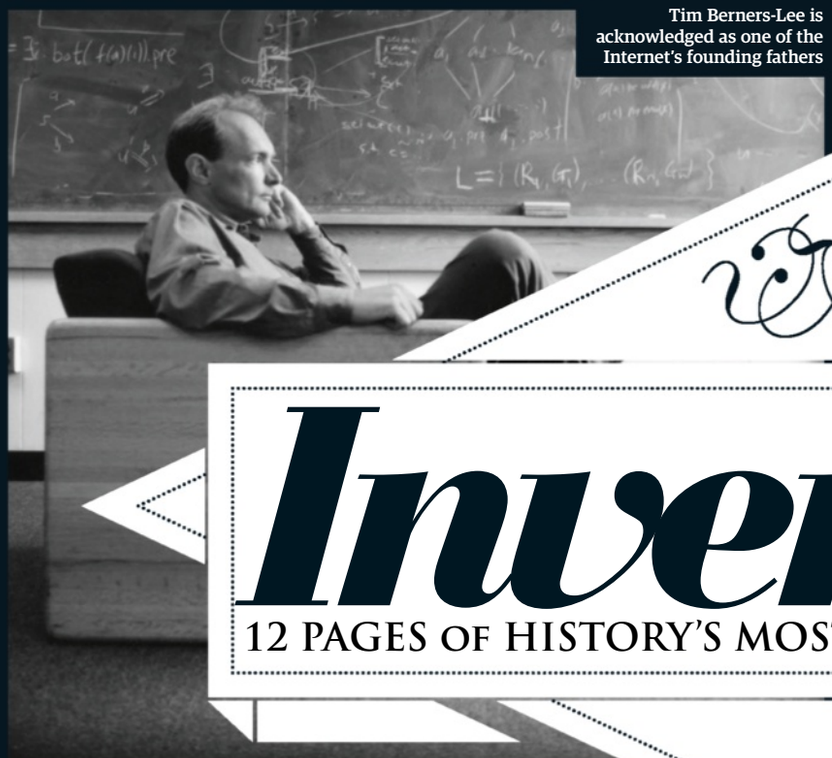
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The German Johannes Gensfleich Gutenberg is credited as the inventor of the printing press



Neanderthals used flint to make fire



Tim Berners-Lee is acknowledged as one of the Internet's founding fathers

Invention

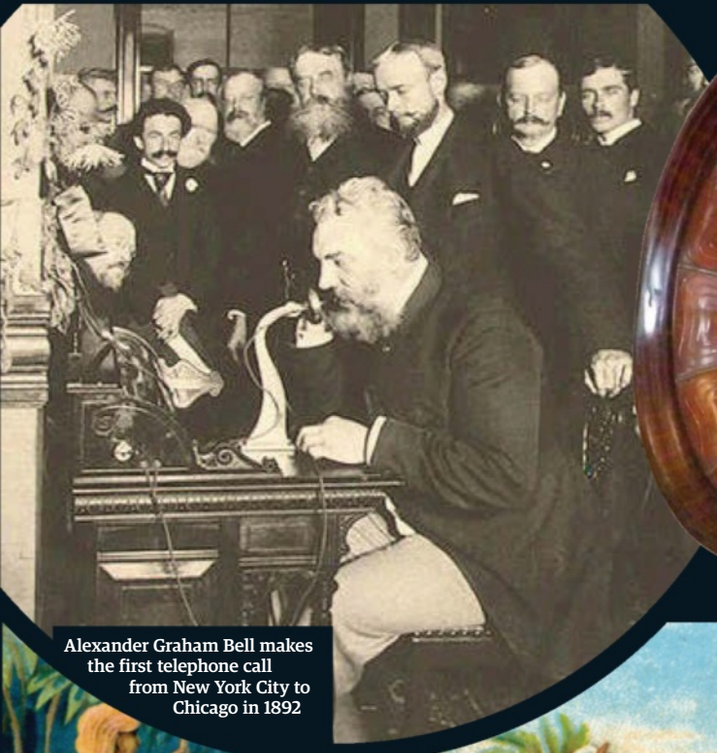
12 PAGES OF HISTORY'S MOST INFLUENTIAL CREATIONS



Scottish engineer John Logie Baird (right) gives a demonstration of his most famous invention, the television



The invention of the iPad led to a raft of other tablet computers being developed



Alexander Graham Bell makes the first telephone call from New York City to Chicago in 1892



A record player from the early 1900s

This issue

14 **Hall of fame**
Ten of history's brightest sparks

16 **Day in the life**
Of a 1920s Ford Factory worker

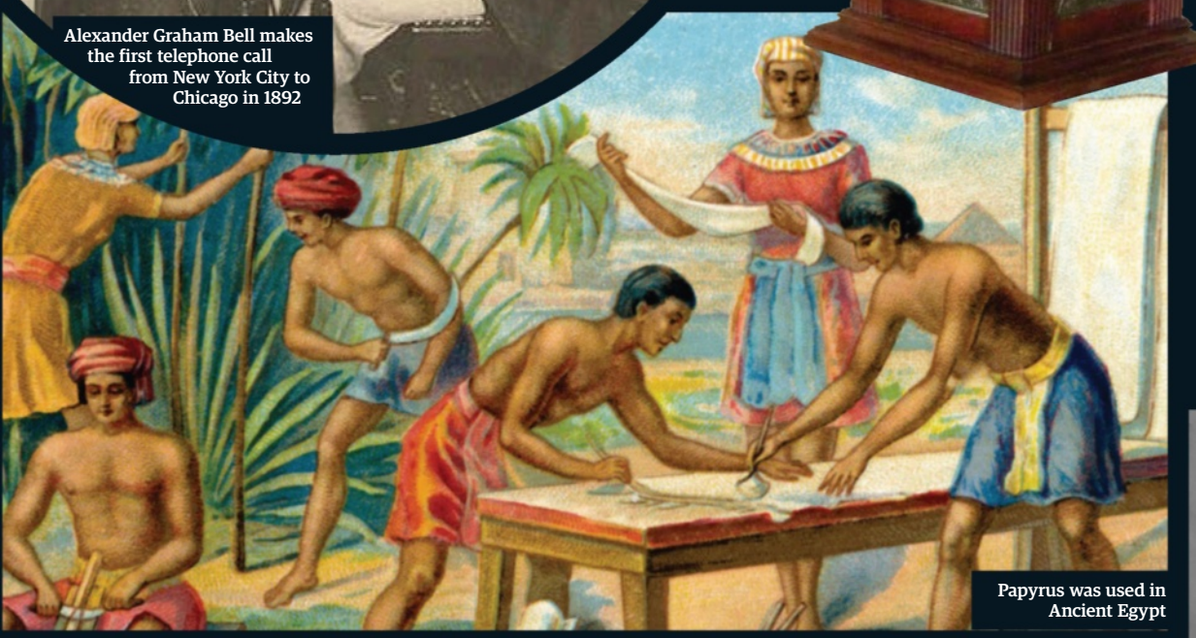
18 **Invention throughout the ages**
What are history's greatest inventions?

20 **Anatomy of...**
A 1920s deep sea diver

22 **How to...**
Build an early flying machine and glide underneath the stars

24 **Inside history**
The train that changed transport, Stephenson's rocket

27 **Top 5 facts**
Nikola Tesla: a real-life mad scientist

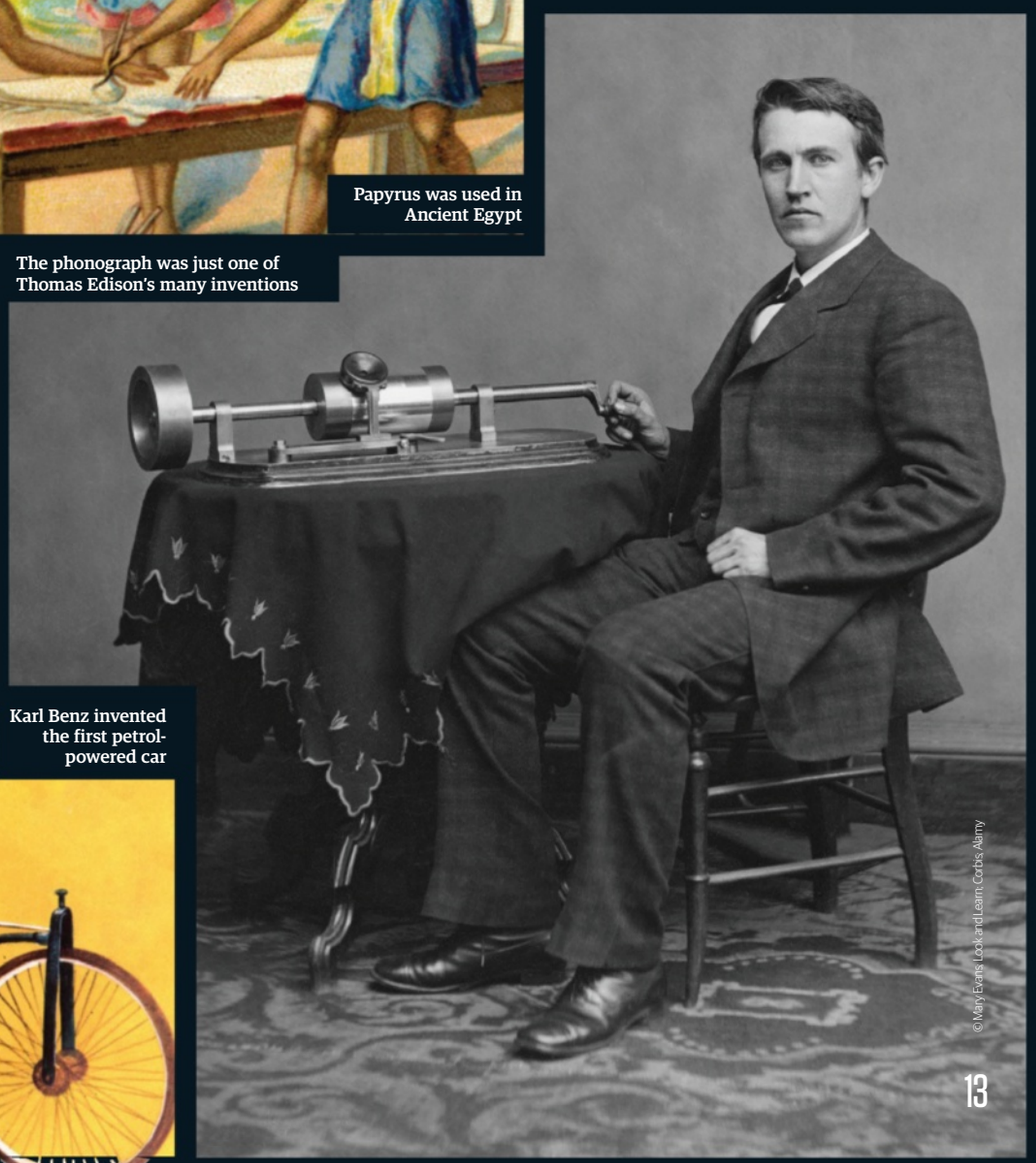


Papyrus was used in Ancient Egypt

Guglielmo Marconi with his own invention: the radio



The phonograph was just one of Thomas Edison's many inventions





Karl Benz invented the first petrol-powered car

© Mary Evans Look and Learn, Corbis, Alamy

Hall of fame

10 INSPIRING INVENTORS

Meet those who see the world a little differently and whose inventions and imagination have changed the world

Maria Telkes

HUNGARIAN 1900-1995

Fascinated by the power of the sun from a young age, Maria Telkes studied physical chemistry at the University of Budapest before travelling to the United States to work and study solar energy. Sculptor Amelia Peabody asked her to work with her, and together they invented the world's first solar-powered house. Telkes noted in 1948: "I envisage the day when solar heat-collecting shelters like power stations will be built apart from the house to develop enough heat from the sun for pumping into an entire community.'



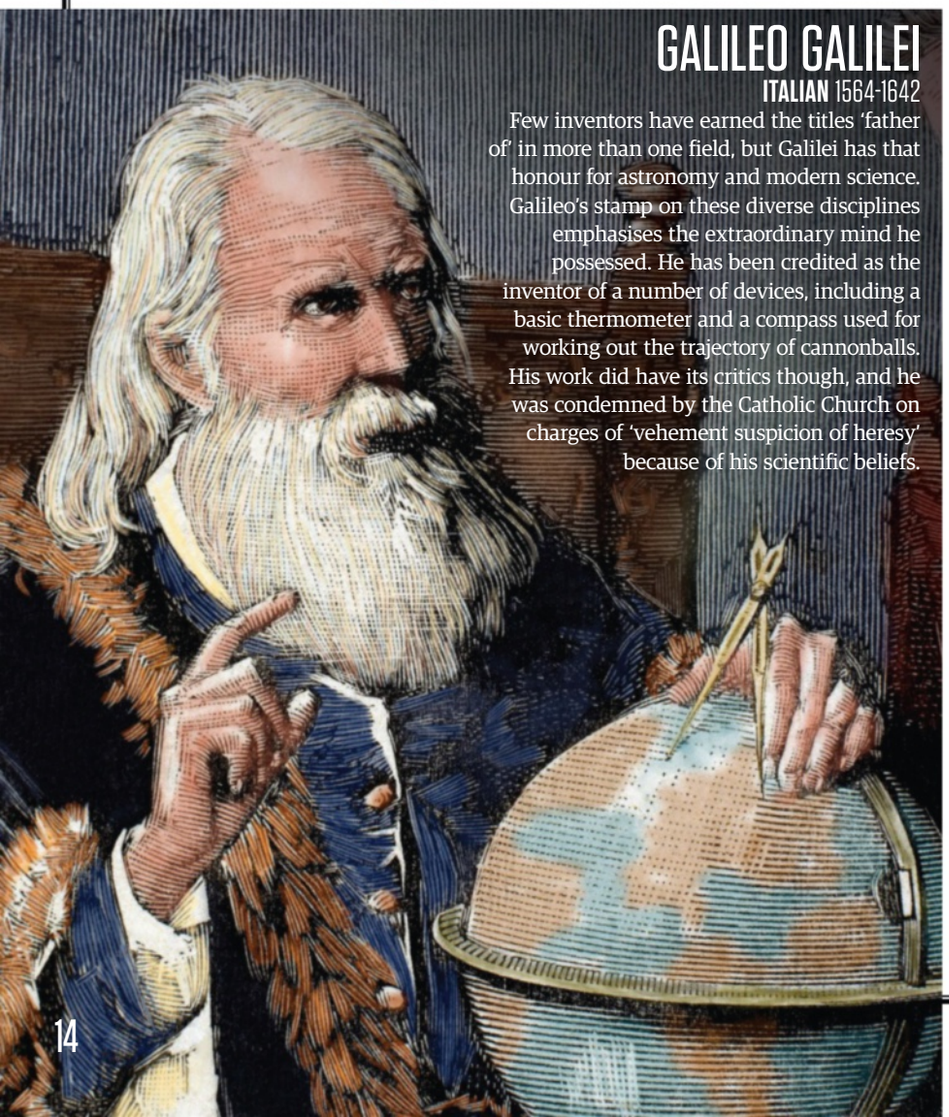
Telkes envisaged the age of solar power over half a century ago



ISAAC NEWTON

ENGLISH 1642-1727

Isaac Newton was the inventor of the world's first reflecting telescope. Newton had studied and lectured on the optical theories behind the reflecting telescope for a number of years before finally inventing one, and used his creation to prove that white light was made up of a spectrum of colours. The main advantage of the Newtonian telescope was that it gave a clearer picture since it did not suffer from the chromatic aberration problem of the refracting designs available at the time.



GALILEO GALILEI

ITALIAN 1564-1642

Few inventors have earned the titles 'father of' in more than one field, but Galilei has that honour for astronomy and modern science. Galileo's stamp on these diverse disciplines emphasises the extraordinary mind he possessed. He has been credited as the inventor of a number of devices, including a basic thermometer and a compass used for working out the trajectory of cannonballs. His work did have its critics though, and he was condemned by the Catholic Church on charges of 'vehement suspicion of heresy' because of his scientific beliefs.

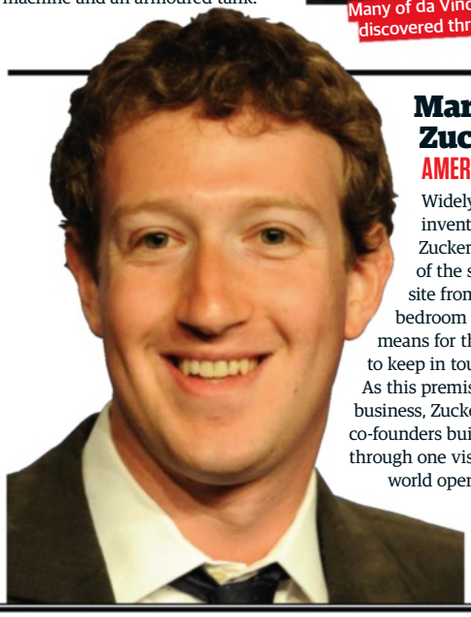
Leonardo da Vinci

ITALIAN 1452-1519

Da Vinci was a master painter, sculptor and inventor in Renaissance Italy. His talent and curiosity allowed him to rub shoulders with the upper echelons of Italian society. His inventions included a grinding machine, hydraulic engines and contraptions used for draining water from harbours. Many of the inventions he designed never saw use, as they were too outlandish to be constructed, such as a flying machine and an armoured tank.



Many of da Vinci's inventions were discovered through his sketches



Mark Zuckerberg

AMERICAN 1984-

Widely credited as the inventor of Facebook, Zuckerberg created the idea of the social networking site from his college bedroom at Harvard as a means for the college fraternity to keep in touch with each other. As this premise developed into a business, Zuckerberg and his four co-founders built their company through one vision - to make the world open. Facebook has over one billion active users throughout the world.

Archimedes
ITALIAN 287-212 BCE

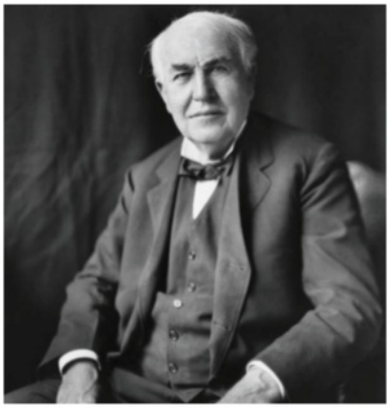
Regarded as the most prominent mind of the ancient world, his advances in mathematics and designs for mechanical equations are still used as the basis for mathematics and physics. He is perhaps best known for the Archimedes screw, which is reputed to have been invented in the Hellenistic period. The screw revolutionised irrigation techniques in Ancient Greece and Egypt by allowing farmers to transfer water from a low to a high position.



Many of Archimedes' inventions are still in use today

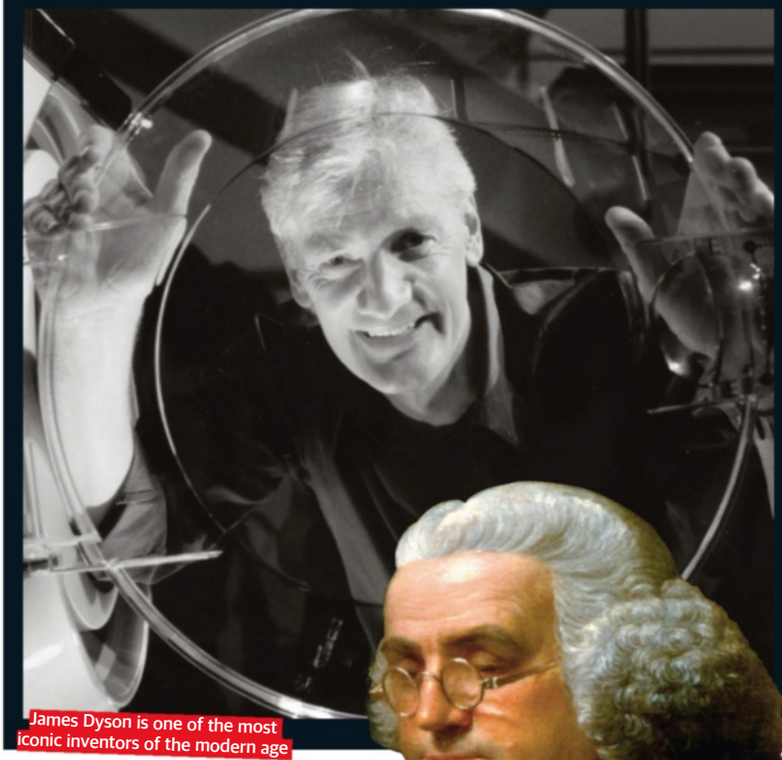
Thomas Edison
AMERICAN 1847-1931

Edison revolutionsed communication in 1877 when he invented the carbon microphone, which allowed one person to hear another through a telephone. The invention was essential in radio broadcasting and saw widespread application in telephones until the 1980s. He also delivered power to thousands of American homes using his direct current distribution system transferring electricity from power generators to homes, although this was superseded by Tesla's alternating current system.



JAMES DYSON
ENGLISH 1947-

One of the late-20th-century's most iconic inventors, James Dyson's first invention was the Ballbarrow, a modified version of a wheelbarrow using a ball instead of a wheel. Other inventions also using a ball followed – including a trolley that launched boats – before he became frustrated at the poor performance of his vacuum cleaner and decided he could do better. After five years of different prototypes, his invention was completed, but no UK manufacturer would take the product so he launched it in Japan through catalogue sales. Dyson vacuum cleaners are now one of that industry's premier brands and Dyson continues to invent, with his latest product a fan without external blades. He is worth an estimated £3 billion ($4.85 billion).



James Dyson is one of the most iconic inventors of the modern age



Tim Berners-Lee
ENGLISH 1955-

The creation of the World Wide Web was a combination of inspiration and abstract thinking by Tim Berners-Lee while he was working for CERN, the European organisation for nuclear research. Originally designed for researchers to instantly share information with each other through computers, Berners-Lee combined pre-existing systems to create a network where people could access information.

"We should be glad of an opportunity to serve others by any invention of ours"

Benjamin Franklin

Benjamin Franklin
AMERICAN 1706-1790

Inventor, revolutionary and one of the founding fathers of the United States, Benjamin Franklin is credited as the inventor of a number of contraptions, such as the lightning rod, harnessing electricity from storms, and the Franklin stove. He also proposed a number of theories to harness the power of nature, including a thesis on kites being used to pull ships across waterways. He never patented his inventions, as he believed everybody should be able to enjoy them.



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Day in the life

FORD FACTORY WORKER

OIL AND TOIL ON THE WORLD'S FIRST AUTOMOBILE PRODUCTION LINE, MICHIGAN USA, 1920S

Founded in 1903 by pioneering industrialist Henry Ford to produce cars for those able to afford upwards of $2,000 at a time when the average school teacher took home $328 a year, the Ford Motor Company earned its place in history in 1908 with the Model-T Ford. The world's first 'affordable' motor car (by 1913 it was priced at $550), a new way of production was needed to meet the demand and in 1913 the Highland Park Ford Plant was opened on the outskirts of Detroit, bringing with it the world's first moving assembly line. Those that worked there endured 12-hour shifts but enjoyed higher than average pay.

1 JOBLESS GATHER

With the Great Depression in full swing, the unemployed gather hopefully outside the factory gates in the early hours to see the hiring manager. Those turned aside tell the next in line what skills the manager's looking for and many lie in order to secure work for the day. Ford, unusually for many auto companies, hires African-Americans.

7 SHIFT BEGINS

A 24-hour production line, the morning's fresh-faced workers take the place of the night shift in the 'Cathedral of Industry.' With unauthorised talking, eating and toilet breaks forbidden, in some factories lunch boxes are placed on pallets that are raised to the ceiling out of reach and 'spotters' prowl the factory floor to enforce the rules.

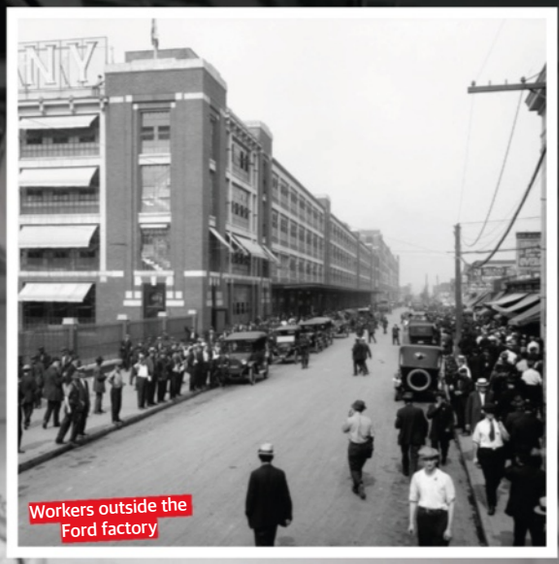
7 FIRST CAR FINISHED

Conveyor belts, rollers and elevators ferry parts from person to person, each one engrossed in a repetitive and often unskilled task in frequently hot and unpleasant conditions. Thanks to this system, four cars are produced every minute, 240 every hour and almost 6,000 every day. The first car begun since the worker's shift began is completed an hour and 33 minutes later and most of the staff on its assembly line have contributed in some way to its creation.



The Model-T Ford was assembled part by part

"With unauthorised talking, eating and toilet breaks forbidden, lunch boxes are placed on pallets that are raised to the ceiling"


Workers outside the Ford factory

LUNCH BREAK

Lunch is strictly limited to 15 or 20 minutes in which workers are also expected to use the rest room. Those who haven't brought their own food pick up meals from the concession where 15 cents buys three sandwiches, a piece of pie, a piece of cake, a piece of fruit and coffee, tea or milk.

SHIFT CHANGES AGAIN

The day shift ends and the next wave of Ford workers arrive to take their place at the busy assembly line. The ever-watchful foremen and spotters forbid loitering and auto workers stream both ways down the street outside the Highland Park factory. Many of the workers choose to stay on for overtime, which is capped at an extra four hours, and completely unpaid if they're making up for missed quotas.

ENGLISH SCHOOL

With 60 per cent of all workers being immigrants, the Ford English School is set up to teach them English and 'American etiquette' in line with Henry Ford's particularly patriotic values. The course lasts 10 months, ending with a ceremony in which graduates walk into a cauldron – a literal melting pot – wearing national costumes and emerge in suits waving American flags.

ARRIVE HOME

Ford workers live in neighbourhoods with others from the same factory. Ford pays $5 a day – twice as much as his rivals – but qualifying conditions are harsh: you must have been working at Highland Park for six months and even then the Sociological Department can make unannounced home visits to check workers are free of alcohol and gambling.

LEISURE TIME

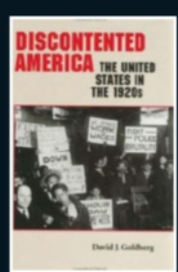
Keen to preserve a traditional American way of life and combat drinking – Detroit's auto-industry boom had led to an increase in prohibition-breaking speakeasies – Henry Ford promoted square dancing among his workers, which he believed encouraged civility. Listening to the radio or phonograph is also popular, with radios in homes rising from 190,000 in 1923 to just under five million in 1929.

SLEEP

With another day of labour in hot and hectic conditions ahead, the Ford worker finally gets some rest. While he sleeps the eight-hour shift that began when he left at 4pm itself ends, replaced by the shift that will be waiting for him bleary-eyed in the morning. Turnover at the Ford factory is high, but for many that $5 a day makes it worthwhile.

How do we know this?

David J Goldberg's *Discontented America: The United States In The 1920s* provides a breezy overview of the social and economic changes in this turbulent decade, many of which where reflected or successfully avoided by the policies of Henry Ford, who successfully guided his company through the Great Depression. A*merican Automobile Workers, 1900-1933* by Joyce Shaw Peterson is a thorough examination of life on the factory floors of Ford, Chrysler and General Motors. Professor of History at the University of Florida Shaw Peterson goes into great detail on how Ford Motor Company interfered with its employees' lives for both good and ill and provides insight into Ford's Security Department, who actively spied on and assaulted workers.



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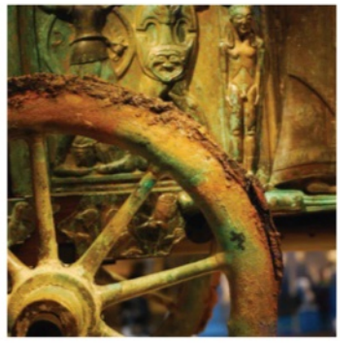
Inventions across history


With 70 per cent of Earth covered in water, boats were an essential invention

POSEIDON'S DOMAIN CONQUERED

UNKNOWN 7500 BCE

While humans have invented many forms of transport during their tenure on Earth, including cars, trains and aeroplanes, the boat has probably been the most useful throughout time. With 70 per cent of the Earth covered in vast stretches of water, humans would always need a form of transport that would allow them to surpass these large liquid boundaries and, beginning with the humble dugout – a canoe fashioned from the trunk of a tree – modern evidence suggests that they did so from the mid-eighth millennium BCE. From the dugout many other forms of boat have been invented, with the form of transportation evolving dramatically and with it increased trade and the sharing and spreading of knowledge, ideas and different customs. From the Chinese junks of the 1st and 2nd century BCE, through the stately multi-decked galleons of the 16th century and onto the vast cruise ships of the 21st, boats have been the primary form of transportation in the human colonisation of planet Earth.



Transport revolution

UNKNOWN 5150 BCE

It is a cliché to include the wheel as one of the world's greatest inventions, but that does not make it any less true, as it radically transformed transportation. The earliest wheels excavated by archaeologists date from 7,150 years ago, with them most likely originating from carts or agricultural ploughs.

Invention timeline



Charting the world
We have the Ancient Babylonians to thank for maps, with the civilisation inventing cartography 8,500 years ago.
6500 BCE

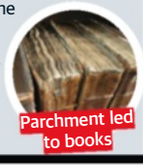
A new perspective
Originating in the Bronze-Age Middle East, glass has gone on to be one of the most widely used materials on Earth.
4500 BCE

From A to Z
The world's first phonetic alphabet, the system all of today's alphabets are derived from, is invented by the Canaanites.
4000 BCE


The first phonetic alphabet

Waste management begins
The oldest discovered sewage system in the world dates from circa 2500 BCE and is located in Pakistan.
2500 BCE

Written word evolves
While cuneiform tablets and papyrus came first, parchment's invention led to the creation of the first books, the dominant form of text today.
150 BCE


Parchment led to books

Magnetism harnessed
The precursor to the modern magnetic compass, the lodestone was discovered by the Ancient Chinese approximately 2,200 years ago. **200 BCE**


The lodestone


Gunpowder

An explosive invention
The deadliest human-made invention of all time, the creation of gunpowder by Chinese alchemists in the first century CE has led to innumerable deaths worldwide since. **800 CE**

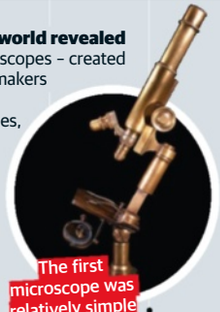
A year defined
The invention and widespread adoption of the Julian Calendar in Roman times led to the creation of the most-used calendar in the world today, the Gregorian calendar.
46 BCE

It waits for no man
Prior to the invention of the clock in the mid-13th century CE, sundials were the primary timekeeping tool. By the 14th century escapement clocks were commonplace.
1250 CE

Power of words unleashed
The creation of the printing press by Johannes Gutenberg allowed documents and books to be made cheaply and en masse.
1450 CE


Early printing press

Microscopic world revealed
The first microscopes – created by Dutch lensmakers – were simple compound types, combining a magnifying and eye lens together for simple magnification.
1590 CE


The first microscope was relatively simple

A view to the heavens
German-Dutch lensmaker Hans Lippershey created the first telescope, which was then built-on and famously promoted by Galileo Galilei.
1609 CE


The first telescope

8000 BCE | 6000 BCE | 4000 BCE | 2000 BCE | 500 BCE | 0 | 1000 | 1300 | 1400 | 1500 | 1600 | 1700

Clothing goes mass-market

EGYPT 3500 BCE

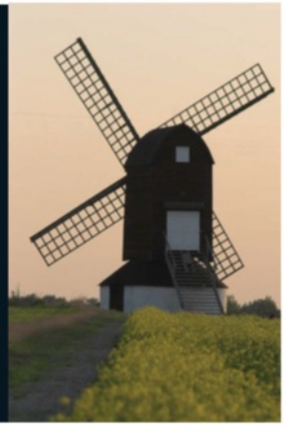
While not immediately obvious as one of the greatest inventions of all time, weaving was a truly groundbreaking one, as it transformed how people dressed and how fabrics were made. Weaving originated in Ancient Egypt, where primitive looms were used to create small fixed-length pieces of cloth. From these humble beginnings weaving tools and techniques became increasingly advanced, with dexterous horizontal and vertical weaving looms spreading throughout Africa, Asia and Europe, and ever more complicated garments were produced en masse.



Wind power

PERSIA 800 CE

Even in today's industrialised world, windmills remain an active part of the landscape. However, it was not until circa 800 CE that they were invented, with the Persians of their vast Eastern empire creating large 12-sail varieties to grind grain and draw water up for use in irrigation systems. The now-traditional horizontal-axle variety was not invented and used on a large scale until the 18th century.

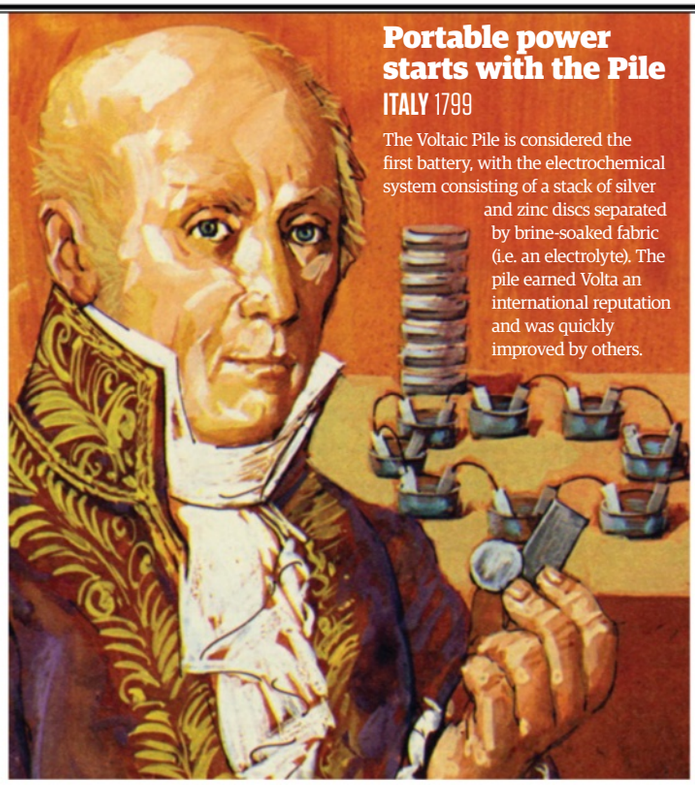


Flushed away

ENGLAND 1596

The concept of the toilet is ancient, but it was not until the close of the 16th century that the precursor to the modern flush toilet was invented by English courtier and inventor Sir John Harington.





Portable power starts with the Pile

ITALY 1799

The Voltaic Pile is considered the first battery, with the electrochemical system consisting of a stack of silver and zinc discs separated by brine-soaked fabric (i.e. an electrolyte). The pile earned Volta an international reputation and was quickly improved by others.

ARCHITECTS TRY AND TOUCH THE SKY

USA 1884

The first skyscraper to be invented was the Home Insurance Company Building, which was successfully built by architect William Le Baron Jenney in 1885. The building, which had 10 floors when complete, was huge for its time, due to Jenney's use of the then-emerging technology of steel-girder frames.

By using steel frames instead of load-bearing stone walls, Jenney could not only build higher than previously thought but also introduce novel designs with a significant increase in the amount of glass adopted. Following Jenney's success the age of the skyscraper really took off, with increasingly high and complex designs constructed and springing up around the world.



Vaccinations catalysed
Today vaccinations are commonplace, but until the first vaccination for smallpox was created by English physician Edward Jenner, this was not the case at all. **1796 CE**


Edward Jenner

The ultimate music box
The first-ever device capable of both recording and then replaying sound was Thomas Edison's phonograph from 1877. All music players today are descended from it. **1877 CE**

Horse and cart replaced
The invention of the first petrol-powered passenger car by Karl Benz led to a rapid revolution in human transportation. **1882 CE**


An early car

Humans take to the skies
The world is a much smaller place today thanks to the Wright Brothers' Wright Flyer, an aircraft that ultimately started the golden age of aviation. **1903 CE**


The Wright Flyer was the first true aeroplane built


Billions of people around the world have a television

The gogglebox is goggled at
Probably the most important invention in human entertainment, the TV is Scottish inventor John Logie Baird's brainchild. **1926 CE**

Everyone gets connected
The backbone of modern-day communication and commerce, the Internet's creation in the Sixties, deep in US military facilities, ushered in a new era in information technology. **1960s CE**

The world, printed
Today the 3D printing field is exploding, with everything from medical to construction applications. This began with the invention of the first 3D printer. **1984 CE**



1710 — 1800 — 1850 — 1870 — 1900 — 1920 — 1950 — 1980 — 2013

Mechanical work initialised
The invention of the early-18th-century Newcomen steam engine can be seen as a milestone in kick-starting the Industrial Revolution. **1712 CE**

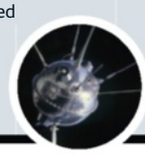

Edison was a prolific inventor

A light is switched on
Years before Thomas Edison and Joseph Swan gained fame for inventing their own light bulbs, Scotsman James Lindsay created a fully functional one in Dundee, Scotland. **1835 CE**

Long distance communication
The first fully-functional complete telephone system was invented and – importantly – patented by American inventor Alexander Graham Bell. **1876 CE**

Power of the atom harnessed
Nuclear power is the primary energy source for many countries worldwide today, with each nuclear power plant descended from the original. **1942 CE**

Space probed
The invention of the Luna 1 space probe by the USSR Luna space programme in the late Fifties instigated the space race and the age of space exploration. **1959 CE**



Computing gets personal
Today the average person possesses at least one form of personal computer, be it laptop, tablet or smartphone. This trend began with the invention of the PC in the Seventies. **1973 CE**

Food gets really cool

SWEDEN 1922

One of the most useful everyday inventions of all time, the refrigerator helps store and preserve food that otherwise would quickly degrade and be inedible. It wasn't until 1922 that an active cooling mechanism was invented, with two students at the Royal Institute of Technology in Stockholm, Sweden, inventing a gas-absorption chilling cabinet. The system worked through a series of state-changing gases within the cabinet, which actively produced a low-temperature atmosphere within. However, despite being invested in and put on sale, this precursor to the modern electric fridge never caught on due to its high price and was quickly scrapped.


Monitor-top-style refrigerator

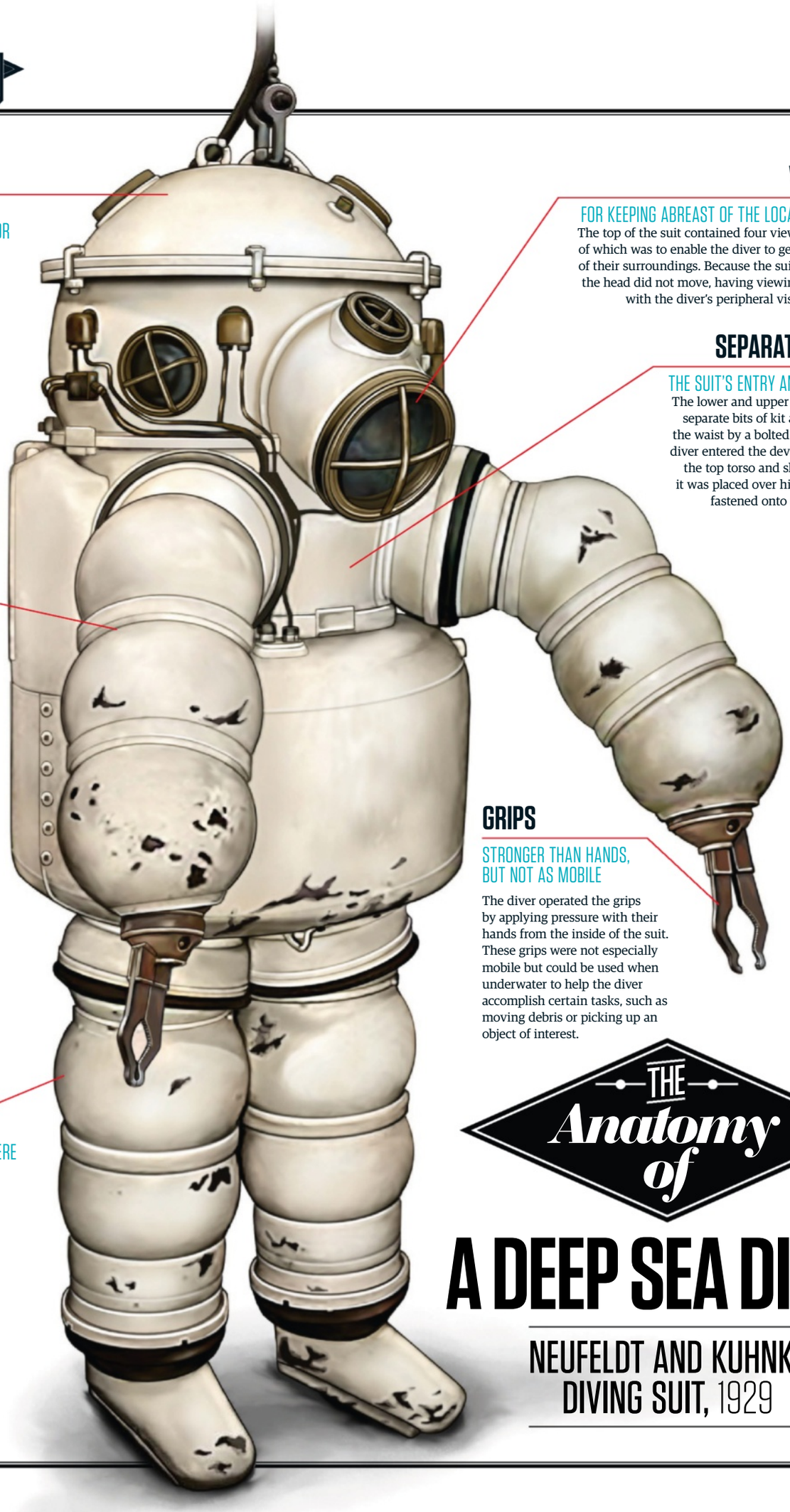
Telstar satellite launched

USA 1962

While it was not the first satellite to be created, the Telstar 1 satellite, launched 10 July, 1962 as part of a multinational collaboration between NASA, US telecommunication companies AT&T and Bell Telephone Laboratories, the UK-based GPO and France's National PTT, was arguably the most important. It laid down a framework for all future commercially-funded satellites, the same satellites that today form the backbone of Earth's communication and entertainment systems. It relayed both the first transatlantic television broadcast and the first telephone call to be transmitted through space. Prior to Telstar, the only satellites launched had been governmental, usually with military purposes, but Telstar showed that the technology had far wider applications for humanity.


Telstar 1 was launched in 1962

© EricChan, Thinkstock; Look and Learn



HELMET

BREATHING AND COMMUNICATION CATERED FOR

The suit's breathing apparatus was operated in a closed circuit, which means that exhaled air is re-breathed after carbon dioxide is absorbed and oxygen added. The helmet also contained a telephone so the diver could stay connected with their team on the surface.

VIEW PORTS

FOR KEEPING ABREAST OF THE LOCAL SURROUNDINGS

The top of the suit contained four viewing ports, the idea of which was to enable the diver to get a panoramic view of their surroundings. Because the suit was so heavy and the head did not move, having viewing ports to coincide with the diver's peripheral vision was important.

SEPARATE TORSOS

THE SUIT'S ENTRY AND EXIT POINTS

The lower and upper torsos were two separate bits of kit and separated at the waist by a bolted flange seal. The diver entered the device by taking off the top torso and slipping in before it was placed over his head and then fastened onto the bottom half.

ARMS

MADE TO TRY AND TAKE THE PRESSURE

The arm section of the suit was assembled with three ball and socket joints each. The suit utilized ball bearings to transfer the pressure load, which could be immense, as the suit was known to go deeper than 75 m (246 ft). The water pressure had an enormous impact on the coupling joints and made movement extremely difficult.

GRIPS

STRONGER THAN HANDS, BUT NOT AS MOBILE

The diver operated the grips by applying pressure with their hands from the inside of the suit. These grips were not especially mobile but could be used when underwater to help the diver accomplish certain tasks, such as moving debris or picking up an object of interest.

ACCESSORIES

BECAUSE YOU NEVER KNOW WHAT YOU'LL FIND DOWN THERE

The suit came equipped with leg extensions (for if the diver was taller than normal) winches, cables and lights. This suit was used at an exciting time in underwater exploration and the diver wearing this suit could expect to be exploring places and wreckages that no one else had previously ever seen, so it was important to be prepared for all eventualities.

THE Anatomy of A DEEP SEA DIVER

NEUFELDT AND KUHNKE DIVING SUIT, 1929

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Wellington

THE PATH TO VICTORY, 1769–1814

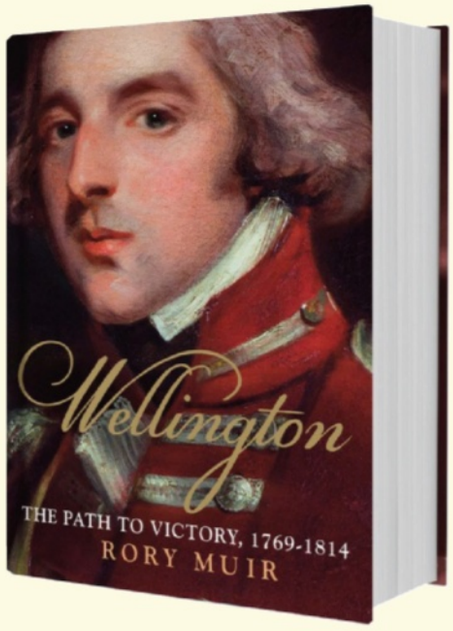
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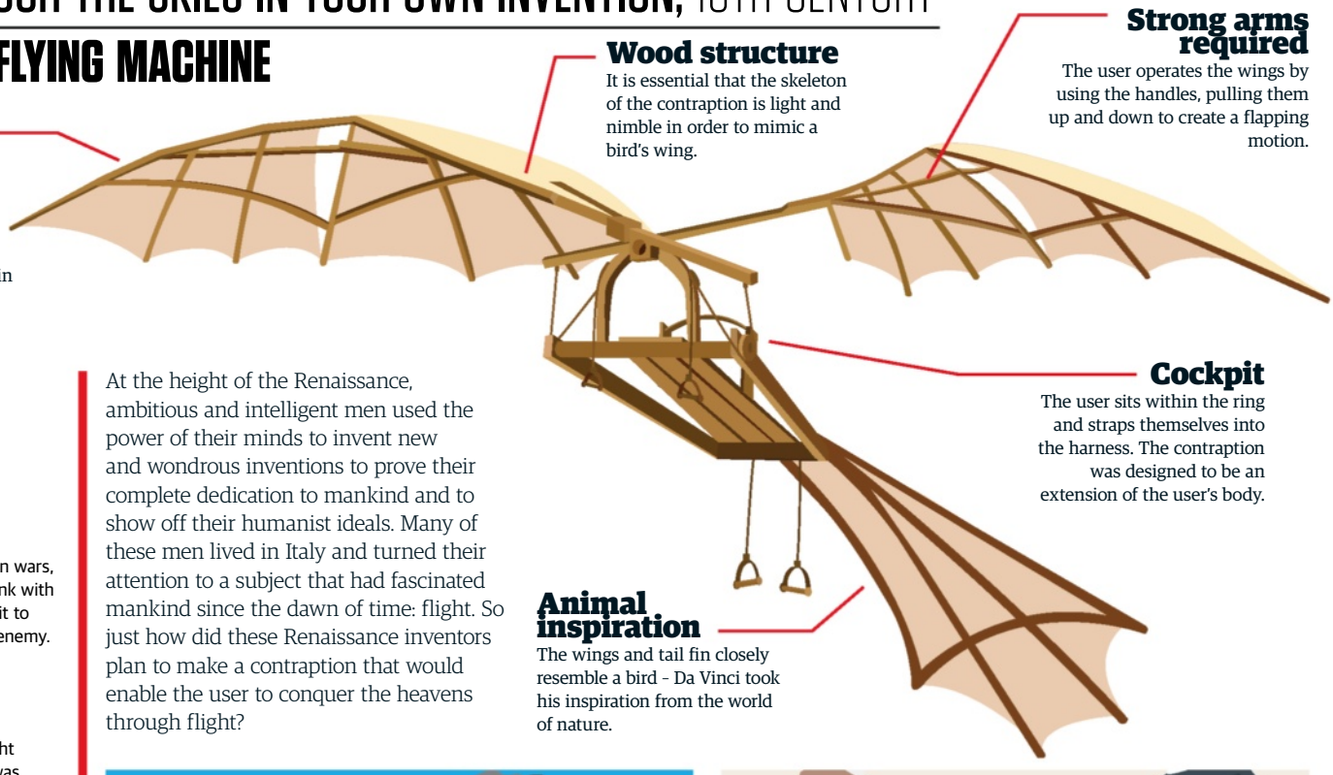
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How to INVENT A FLYING MACHINE

SOAR THROUGH THE SKIES IN YOUR OWN INVENTION, 16TH CENTURY

DA VINCI'S FLYING MACHINE



Catch the breeze
Canvas-like material was used to catch the wind and propel the user forward through the air in order to maintain flight.

Wood structure
It is essential that the skeleton of the contraption is light and nimble in order to mimic a bird's wing.

Strong arms required
The user operates the wings by using the handles, pulling them up and down to create a flapping motion.

Cockpit
The user sits within the ring and straps themselves into the harness. The contraption was designed to be an extension of the user's body.

Animal inspiration
The wings and tail fin closely resemble a bird - Da Vinci took his inspiration from the world of nature.

DA VINCI'S INVENTIONS

DA VINCI TANK
1494-99
Designed as a device to win wars, eight men operated the tank with a cannon on every side of it to 'thin out the ranks' of the enemy.

ORNITHOPTER
1505
Designed to mimic the flight of birds, the Ornithopter was a precursor to the completed design of his flying machine.

AERIAL SCREW
1493
Da Vinci's inpiration for his helicopter-like device came from falling maple leaf seeds. Like most of his flying sketches, it was impractical for flight.

CANNON
1499
Designed to be built on a crank system that allowed different trajectories for firing, the cannon offered unmatched fire power with its large barrel.

PARACHUTE
1483
Da Vinci sketched the first modern parachute, which was successfully tested in 2000. The tester noted it had a smoother ride than present-day parachutes.

At the height of the Renaissance, ambitious and intelligent men used the power of their minds to invent new and wondrous inventions to prove their complete dedication to mankind and to show off their humanist ideals. Many of these men lived in Italy and turned their attention to a subject that had fascinated mankind since the dawn of time: flight. So just how did these Renaissance inventors plan to make a contraption that would enable the user to conquer the heavens through flight?

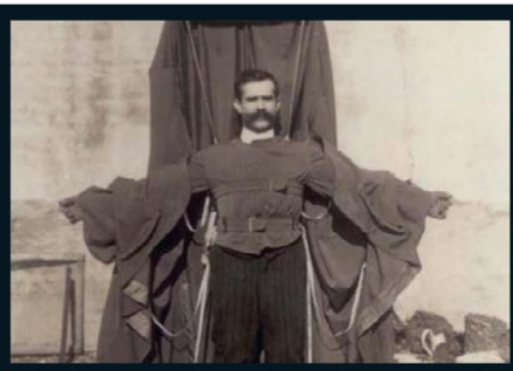




01 Get inspired
Gain inspiration from your surroundings to get the creative juices flowing. Many of the inventors during this period took inspiration from nature and the creatures around them, seeing them as god's creatures and thus perfect in their construction. Take extra note of birds and other flying creatures and study their movements in the air.

02 Wealthy patron required
All the best inventors of the 16th century had a patron to pay for their materials and workshop. These could be learned men from universities or rich members of the nobility. Since your invention will require a lot of money, it is best to find an open-minded person who is rich enough to pay for your time and materials.

How not to invent a flying machine



The unfortunate case of Franz Reichelt has gone down in history as a lesson in how not to test a flying invention. Reichelt's idea of constructing a suit that would allow the wearer to glide through the air led him to experiment with various forms of cloth to create a parachute. He decided to test his parachute by leaping off the Eiffel Tower in order to prove to the world that his invention could safely glide him down to earth. It was an ambitious bid for immortality.

He had invited the press to attend, including one of the world's first film crews who captured what happened next. As he jumped off the tower the cloth folded around him, bundling him up, and he plummeted head first to the ground. Parisian newspapers later reported that after he hit the ground his legs were crushed, his skull and spine was broken and his eyes were wide open in terror. His overconfidence had proved fatal.



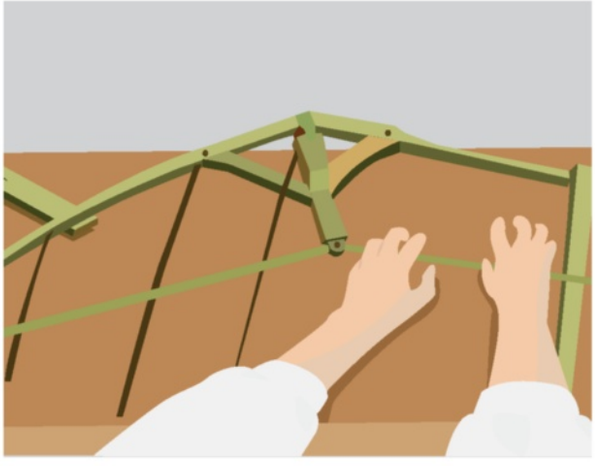
03 Design your masterpiece

Make sketches of your masterpiece before beginning to build. Men like Galileo and da Vinci made sketches, which they could come back to if they needed inspiration for later designs. Guard them closely, however – there is much competition among maestros and your ideas may be stolen.



04 Go shopping

Travel into the famed open markets of Florence, Venice and Milan to get the materials you need to build your flying machine. You are lucky that you live in Italy: the Italian kingdoms boast some of the greatest trading ports in the world, so rare materials can be obtained easily.



05 Begin building

Retire to your workshop with your material and spend hours and hours building your invention. Forgo sleep, food and any semblance of a personal life to get your vision off the ground and into the sky. It is said that da Vinci locked himself in his workshop for days on end constructing his designs – this is the standard you must aspire to.



06 Fly like a bird

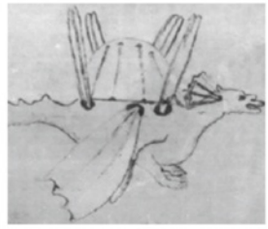
After months of painstaking work the time has come. Wheel out your marvellous flying machine from your workshop and allow the townspeople to gaze at it in wonder. This is your moment and soon you will conquer the skies. Wave goodbye to your relatives and take a walk off a tall cliff to test your flying machine. What could possibly go wrong?

TYPES OF GLIDER

BURATTINI DRAGON

1647 - AGORDO ITALY

Designed with four fixed glider wings, inventor Tito Livio Burattini's dragon was alleged to have lifted a cat into the air.



SAQQARA BIRD

2000 BCE - EGYPT

Widely seen as the earliest example of a glider, the Saqqara Bird is said to have dated back to the time of the pharaohs.



CHINESE WAR KITE

550 CE - CHINA

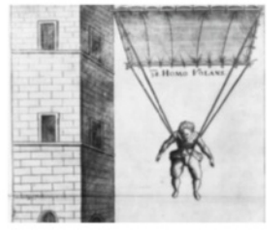
Designed with a flat base, the Chinese kite was one of the earliest examples of a man-made flying object. Some were even large enough to carry people.



FAUSTO VERANZIO

1617

Known as the 'flying man', Veranzio's Homo Volan is popularly thought to have tested his creation by jumping off St Mark's Campanile in Venice.



INSIDE HISTORY

STEPHENSON'S ROCKET

INNOVATIVE STEAM LOCOMOTIVE, BRITAIN 1829

"Stephenson had incorporated new ideas to make better use of its steam-powered pistons"

01 The crew
Although the Rocket was not complicated to operate, it needed two people. One to 'drive' the engine and look out for obstructions on the track and another to feed coke (derivative of coal which burned more cleanly) into the firebox and keep an eye on the amount of heat being produced by the boiler.

02 Cylinder
The cylinder compressed the steam, which then pushed down on the piston rod, creating a downward motion. As the steam was released through the exhaust pipe, steam entered from the other side of the piston rod by the eccentric rod D-valve, which forced the piston rod back up.

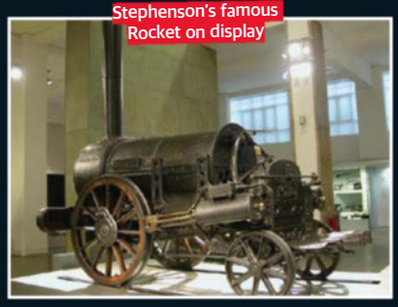
03 Multiple firetube boiler
One of the key innovations of the Rocket was the multiple firetubes through which the hot gas from the firebox traveled. Previous models relied on one tube surface for the gas to travel through to produce steam but The Rocket had multiple tubes, increasing the heated surface area within the boiler, which produced more steam.

10 Wheels
The Rocket's wheels were designed to take two and a half tons of weight on its front set while the back wheels were considerably lighter. This reduced the weight of the second axle behind it, making it faster.



09 Eccentric rod
The eccentric rod was attached to the wheel axle, as the steam in the cylinder moved the piston rod down it in turn moved the eccentric rod up, forcing steam into the other half of the cylinder. This forced the piston rod back. The process reversed itself when the piston rod came back up, turning the wheels.

How do we know this?
Stephenson's famous Rocket experiment was examined and documented not only by the judges present at the day of the Rainhill trials but also by spectators gathered at the unveiling of the Liverpool and Manchester railway line the day after, where British prime minister Arthur Wellesley, Duke of Wellington saw the latest breakthrough in steam locomotion for himself. Stephenson, like all the great engineers of the time, wrote technical specifications on all of his inventions and the Rocket's design was used as a template for all future steam engine production. It has gone down in history as a triumph of British engineering and as such has been studied and written about extensively. The Rocket is currently housed and displayed at the Science Museum in London.


Stephenson's famous Rocket on display

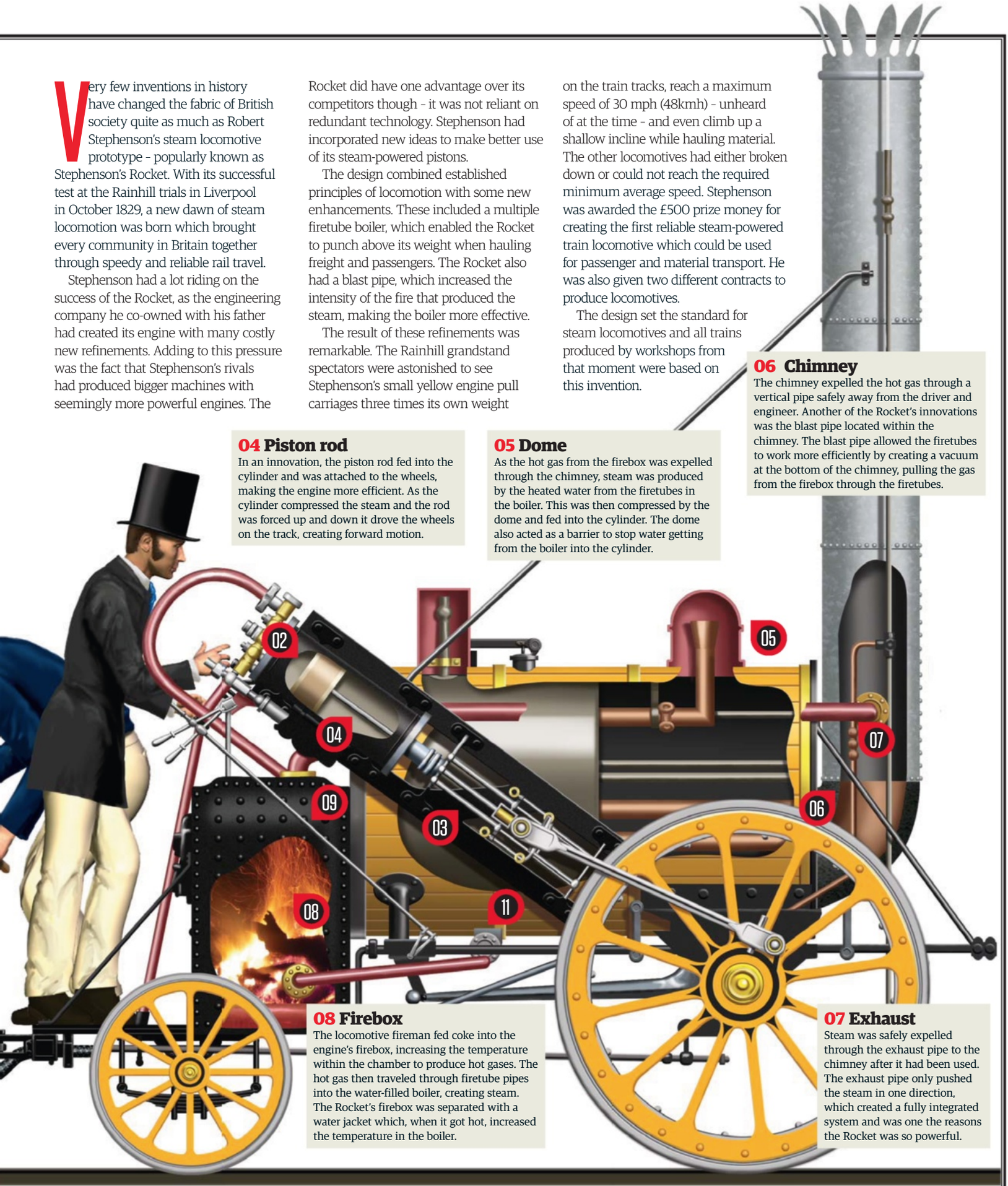
Very few inventions in history have changed the fabric of British society quite as much as Robert Stephenson's steam locomotive prototype – popularly known as Stephenson's Rocket. With its successful test at the Rainhill trials in Liverpool in October 1829, a new dawn of steam locomotion was born which brought every community in Britain together through speedy and reliable rail travel.

Stephenson had a lot riding on the success of the Rocket, as the engineering company he co-owned with his father had created its engine with many costly new refinements. Adding to this pressure was the fact that Stephenson's rivals had produced bigger machines with seemingly more powerful engines. The Rocket did have one advantage over its competitors though – it was not reliant on redundant technology. Stephenson had incorporated new ideas to make better use of its steam-powered pistons.

The design combined established principles of locomotion with some new enhancements. These included a multiple firetube boiler, which enabled the Rocket to punch above its weight when hauling freight and passengers. The Rocket also had a blast pipe, which increased the intensity of the fire that produced the steam, making the boiler more effective.

The result of these refinements was remarkable. The Rainhill grandstand spectators were astonished to see Stephenson's small yellow engine pull carriages three times its own weight on the train tracks, reach a maximum speed of 30 mph (48kmh) – unheard of at the time – and even climb up a shallow incline while hauling material. The other locomotives had either broken down or could not reach the required minimum average speed. Stephenson was awarded the £500 prize money for creating the first reliable steam-powered train locomotive which could be used for passenger and material transport. He was also given two different contracts to produce locomotives.

The design set the standard for steam locomotives and all trains produced by workshops from that moment were based on this invention.



04 Piston rod
In an innovation, the piston rod fed into the cylinder and was attached to the wheels, making the engine more efficient. As the cylinder compressed the steam and the rod was forced up and down it drove the wheels on the track, creating forward motion.

05 Dome
As the hot gas from the firebox was expelled through the chimney, steam was produced by the heated water from the firetubes in the boiler. This was then compressed by the dome and fed into the cylinder. The dome also acted as a barrier to stop water getting from the boiler into the cylinder.

06 Chimney
The chimney expelled the hot gas through a vertical pipe safely away from the driver and engineer. Another of the Rocket's innovations was the blast pipe located within the chimney. The blast pipe allowed the firetubes to work more efficiently by creating a vacuum at the bottom of the chimney, pulling the gas from the firebox through the firetubes.

08 Firebox
The locomotive fireman fed coke into the engine's firebox, increasing the temperature within the chamber to produce hot gases. The hot gas then traveled through firetube pipes into the water-filled boiler, creating steam. The Rocket's firebox was separated with a water jacket which, when it got hot, increased the temperature in the boiler.

07 Exhaust
Steam was safely expelled through the exhaust pipe to the chimney after it had been used. The exhaust pipe only pushed the steam in one direction, which created a fully integrated system and was one the reasons the Rocket was so powerful.

© Terry Pastor/The Art Agency

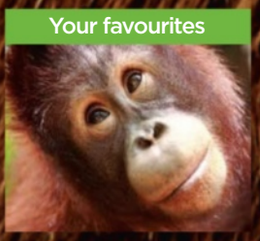
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Top 5 facts NIKOLA TESLA

ONE OF THE 20TH CENTURY'S GREATEST MINDS, 1856-1943

01 HE DISPLAYED ECCENTRIC BEHAVIOUR

Tesla's strange behaviour was well known in his adopted hometown of New York. He could not stand the sight of pearls, and he would refuse to speak to anyone wearing them. He often displayed obsessive-compulsive behaviour, such as demanding exactly 18 napkins in groups of three on the table when he dined.

NIKOLA TESLA

Austrian Empire, 1856-1943

Brief Bio

Nikola Tesla was one of the foremost scientists of the early 1900s. Born in the Austrian Empire, he moved to the US to begin experimenting with electricity. He developed machines that alternated electric current and patented the Tesla column that created spectacular displays of electricity. He died aged 86 in New York.

02 He invented the alternating current

The advances Tesla made in the practical implementation of electricity earned him a cover in *Time* magazine with the caption 'All the world's his power house.' His research allowed electricity to be conducted through alternating current (AC) where current flows in pulses and is still used to this day.

03 He designed a death ray

Tesla claimed that he had plans to invent a beam that directed high-energy particles down a narrow strait and was capable of, 'bringing down a fleet of ten thousand enemy airplanes at a distance of two hundred miles'. Still, the 'death ray', as it was popularly known, was not earmarked for future development by the US military.

04 He had many talents

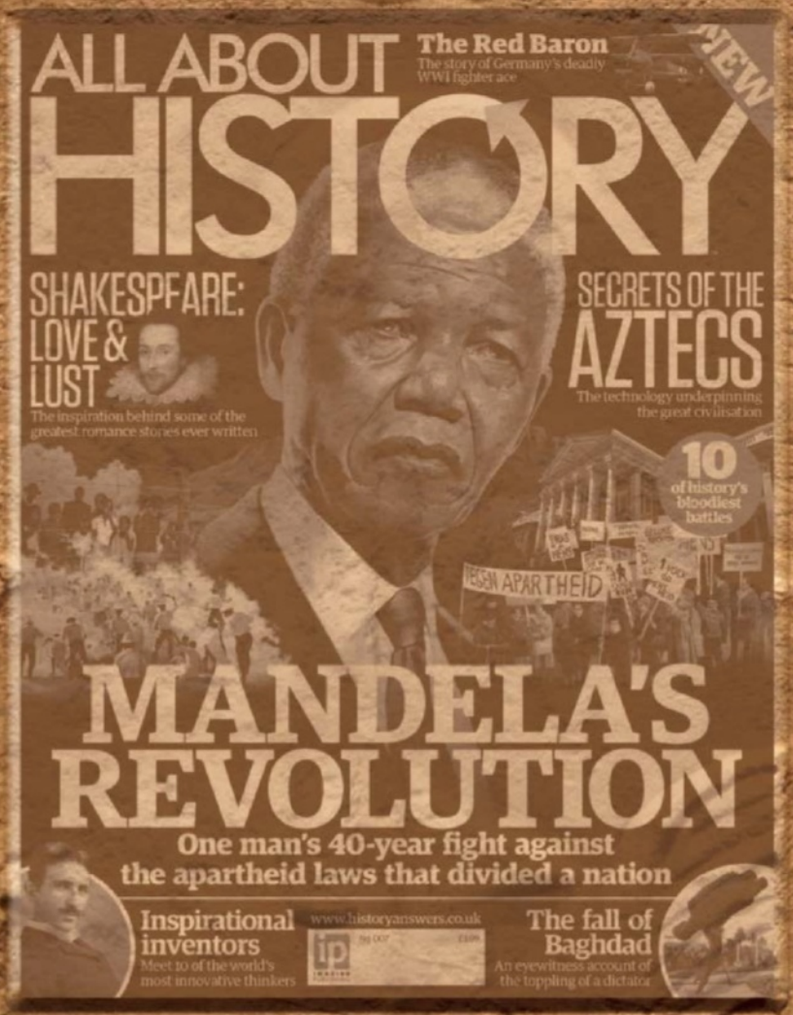
The inventor had a photographic memory and was known to memorise from heart complete books and images. He was also fluent in five languages and had a vivid imagination – he said that ideas for inventions appeared to him in visions 'fully formed' and he typically did not draw his inventions out by hand but worked solely on memory.

05 He fell out with Edison

Thomas Edison secured Telsa's services to help him fix some of the problems with his direct current generators in return for a fee, but afterwards claimed that he had only been joking. Tesla's AC invention pushed Edison's into the shade and by 1912 their animosity was so great that Tesla allegedly refused to share the Nobel prize with his rival, so neither of them ended up winning the prize.

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What was it like?

FLORENCE 1475

Education

Having a good education depended almost entirely on wealth, as there were no public schools and private tutors provided the schooling. These tutors would provide education in all manner of matters from science, maths and classics to arts and etiquette.

Religion

Florentines' religion was Catholic. The building of fantastic churches and cathedrals by 'great men' was a way to gain prestige. This strong Catholic faith was occasionally complicated by the actions of the Papal States, which sometimes aligned themselves against Florence.

A panoramic view showing the Basilica di Santa Maria del Fiore

Finance

The Medicis initially made their money as traders before becoming one of Europe's largest banks. Lorenzo had to juggle his role as primary citizen with his position as head of the family's bank and these two interests often clashed. The de Medicis bankrolled much of Florentine government.



The Republic of Florence was a leading centre for art and literature during the Renaissance and home to some of the world's most prestigious artists

One of the five main Italian city states at the time - alongside Milan, Naples, Venice and the Papal States - Florence was an exciting and vibrant city and the driving force behind the Renaissance. Nominally a Republic, where power rested with a ruling class and the government institutions they populated, the city was dominated by the Medici family.

The family first came to prominence through Cosimo de' Medici and, just like a kingship, his power passed onto his son Pierro and in 1469 to Cosimo's grandson, Lorenzo. During this period the head of the family was theoretically a mere citizen of the Republic, although in reality he was much more than this and was effectively head of state. By 1475 Lorenzo (later to be titled 'The Magnificent') had consolidated his position and ensured Florence remained a haven for artists seeking patronage. Realising that the city could not compete with some of its larger rivals in terms of military strength, Lorenzo continued his family's policy of establishing it as an artist's haven.

Although the city was a vibrant place to be it was also a dangerous one; as Italy was not a united country the balance of power was almost constantly in flux and treaties and alliances were quickly made and rescinded. Aligned to this was the fact that the threat of foreign intervention from Spain and France, the major world powerhouses at the time, was never far away.



Banking was one of Florence's main industries

Military

Florence had no standing army and was thus dangerously reliant on mercenary armies. These armies would often extort vast amounts of money and then do their best to avoid combat. This meant Italy was vulnerable to foreign powers and those skilled in diplomacy were vital.

A famous painting by Paolo Uccello depicting the Battle of San Romano between Florence and Sienna

Industry

The main industrial pillars of Florence were banking, art and the manufacture and trade of cloth, particularly wool. Different trades were represented by guilds that lobbied government and the textile guild was one of the most powerful.

Art

Florence was at the heart of the Renaissance and its leading men used art as a means of promoting their city. Brunelleschi, Michelangelo and Da Vinci all worked in the city during the Renaissance and the city had the first public library since Antiquity.



Leonardo Da Vinci's youth was spent in Florence



Coat of arms of the House of de' Medici

A painting celebrating Lorenzo de' Medici's patronage of the arts and sciences

Government

Florence was a Republican democracy with many different councils of government, but only citizens of a certain age and social class were allowed to participate. Lorenzo was effectively head of state but positioned himself as working for the city and government.

Society

Class and gender lines divided Florence, but there were opportunities for those from a lower social class. As a means of maintaining checks and balances Lorenzo often promoted men of a lower class who were dependent on his patronage for their power.

Lorenzo de' Medici returns having made peace with Naples

Heroes & Villains

Baron Manfred von Richthofen

Known as the 'Red Baron', Manfred von Richthofen's sharpshooting marked him out as a true knight of the sky during World War I

Written by Chris Fenton

Cold, uncompromising and completely dedicated to duty, Manfred von Richthofen's status as one of the German Air Service's elite flying aces was challenged by 88 Allied pilots during the three years he piloted fighter planes on the Western front. These Allied pilots all met the same end; they were shot down. His skill in the cockpit and fearless bravery in leading his men onto the aerial battleground of World War I earned him a lasting place in aviation history. His insistence on painting his planes red to show the Allied flyers that he held no fear also awarded him the title of the 'Red Baron'.

> Throughout his career on the Western front he consistently suffered motion sickness but he never let it get the better of him

Born into minor nobility in the Prussian town of Kleinburg, the young Richthofen was a deadly hunter of game animals. In fact, he loved nothing more than to stalk prey in the dark Germanic forests of Silesia - one whole room of his parents' house was dedicated to displays of his hunting trophies. It was this craving for the chase and the kill that influenced him joining the German army at just 11 years old, training as an officer cadet at a prestigious German military school in Wahlstatt. He was not a particularly hardworking student though and, as he noted later: "I never was good at learning things. I did just enough work to pass, in my opinion it would have been wrong to do more than what was just sufficient." Despite this apparent laziness, his horsemanship and natural shooting ability meant he didn't need to work hard - the makings of a great warrior were already there.

> Richthofen was a keen hunter, collecting trophies of his kills which he used to decorate the halls of his parents' home

Befitting his aristocratic background, he joined a famed cavalry unit in 1911, the Urlans, a lancer regiment whose traditional job was to seek out enemy soldiers on the battlefield and run them through with lances. Richthofen didn't have to wait long for his first taste of conflict, with World War I breaking out just two years after he took up formal duties with the Urlans. The trenches were no place for horses though and the cavalry was reduced to a secondary role on the front, frustrating the brash Richthofen. He had joined the cavalry for excitement and the thrill of the hunt, not to sit around in damp trenches being shot at from an enemy hundreds of yards away. The final straw came when he was asked to act as a courier for the infantry divisions. There was no way he was going to demean his honour by acting as a courier - especially to the foot slogs in their filthy trenches. By chance, his unit was stationed near an aerodrome for the fledgling German Air Service and Richthofen was intrigued by the new flying machines stationed there. Perhaps flying would offer him the excitement and glory he desired. He immediately signed up for the risky service and began basic flight training in 1915.

His first experience of flight did not mark him out as a particularly talented pilot. He admitted later: "At first we flew straight ahead, then the pilot turned to the right, then left. I had lost all sense of direction over our own aerodrome ... I didn't care a bit where I was, and when the pilot thought it was





With over 80 kills to his name Richthofen was considered the greatest pilot the German Air Service had ever produced

"By 1916 Richthofen had downed 16 enemy planes and was becoming a living legend"



The arena of the skies

Flight as an arena for combat was as unforgiving as it was deadly. Many different pilots had their own tactics for survival, ranging from maintaining height and bearing down on the enemy from above with speed, to simply turning tail and running for home if an enemy with a superior machine came within range. Richthofen's own tactics were simple and easy to learn for the rookie pilots he had in his unit: "I dive out of the sun at him taking into consideration the wind direction. Whoever reaches the enemy first has the privilege to shoot."

Often guns jammed or pilots got separated from their flight leader. In order to avoid these problems, Richthofen made sure everyone in his unit stayed together to try and ensure all his pilots got home safely, living to fight another day. He also ensured that all his pilots checked their weapons before they took off, noting: "Machine gun jams do not exist! If they do occur it is the pilot who is to blame!"

High mortality rates plagued fighter pilots from all sides and the average life span of a pilot was just 11 days, with a pilot considered an ace after he had shot down just five enemy planes. Not only did pilots have to contend with their enemies in the sky and on the ground but mechanical failures were common on all the aircraft flying during WWI as well. In the event of an emergency pilots didn't have parachutes so all they could do was try their best to land as safely as possible.

"Richthofen separated a fleeing Allied pilot from his wingman and pursued him at very low altitude"

time to go down ... I was disappointed." Yet unlike his schooling, he had found something he truly loved and was willing to fully commit himself to: "I was already counting down the hours to the time we could start again." He quickly gained more confidence in the air, stubbornly ignoring the air sickness he frequently suffered from and became an expert shot from the backseat of observer planes. His first kill was an unconfirmed lucky shot from a reconnaissance mission over the Champagne front - he swore it would not be his last.

Richthofen was noted for his cold aloofness and his total dedication to flying for the Kaiser

By 1916 Richthofen had downed 16 enemy planes and was becoming a living legend. His technique and attitudes befitted the qualities of a brash cavalryman: "I approach the enemy from behind to within 50 metres, I aim carefully, fire and the enemy falls ... one does not need to be a clever pilot, or a crack shot, one only needs the courage to fly in close." To Richthofen there was not much more to flying than there was to hunting, noting after one mission: "When I have shot down an Englishman my hunting passion is satisfied for a quarter of an hour."

Richthofen's finest hour came on 16 November 1916 when he battled the greatest fighter ace ever to leave the shores of England, Major Lanoe Hawker. The two met over the fields of Achiet in northern France and fought for no more than 20 minutes, but it was enough time for the Red Baron. Hawker was at a disadvantage: he was flying an obsolete FE2 'pusher' plane with its propeller facing backwards, which made it less manoeuvrable than Richthofen's fast and nimble Albatros D.III. Hawker could not outmanoeuvre his rival and decided to make a run for it. As the two lost height, ducking and diving around each other, Hawker began to run out of fuel and, in a last desperate attempt, swung his plane around to try and meet Richthofen head on - a fatal error. The German peppered Hawker's plane with precise gunfire, scoring hits to the engine and Hawker himself. The FE2 buckled and burst into flames as it crashed to the ground.

Despite the endless victories Richthofen was not infallible. In the unforgiving French skies of 1917 he was shot down, ironically by a crew piloting the same aircraft Hawker had been flying in their dog fight - the obsolete FE2. Albert Woodbridge, one of the English pilots involved recounted: "I recall there wasn't a thing on that machine that wasn't red and god how it could fly ... I kept a steady stream of lead pouring into the nose of that machine ... it slipped into a spin out of control." Richthofen managed to make a crash landing but the experience of being shot down wounded him physically and mentally.

Defining moment

Confirmed kill
17 September 1916

Having passed basic flight, Richthofen claims his first official kill over the fields of Cambrai, France flying with Oswald Boelcke. While on patrol piloting the highly maneuverable Albatros D.II biplane, his squadron leader spots a group of British planes flying in formation below them, Richthofen singles out one of the planes and after a number of ducks and dives finally downs the hapless British fighter. He noted after the encounter, 'I was animated by a single thought: the man in front of me must come down whatever happens.'



Timeline

1892

- **Birth of the baron** Manfred von Richthofen is born into an aristocratic German family in Breslau Germany. In his youth he becomes a keen hunter and develops his shooting skills, becoming a crack shot. **2 May 1892**



- **Horseman** Richthofen joins the Uhlan cavalry regiment as an officer in 1912. He is widely regarded as an excellent rider and continues to serve in his regiment during the early months of World War I. **1912**
- **Wings attained** Bored and frustrated with the limited role the cavalry are playing in the trenches, Richthofen is intrigued by an experimental German military plane and immediately volunteers for the German Air Service. **May 1915**
- **First kill** Richthofen claims his first kill as a gunner for a two-seater reconnaissance plane over the Champagne front, but he cannot officially claim it as the plane crashes behind Allied lines. **August 1915**
- **Fighter school** Having served as an observer and gunner with Fliegerabteilung 69, a German reconnaissance squadron, he meets fighter ace Oswald Boelcke who picks him for fighter training. **October 1915**
- **Bumpy start** Richthofen doesn't make a good impression during his initial pilot training and has little feel for flying. However, he is considered an excellent shot and soon grows in confidence in the cockpit. **March 1916**





When he returned to front line duties a year later his air sickness had returned.

By the beginning of 1918 the Red Baron was back in the cockpit and eager to regain his ace status, now as the leader of Jagdgeschwader 1. His appointment had actually come a year before but his injuries had prevented him from making the position his own. Jag 1 was famously known as the 'flying circus', the original top gun fighter squadron for hot-shot pilots, with Richthofen as their commander and greatest hero. The group were given the best planes the German military could assemble, including the famous triple-winged Fokker D-1 with its superior manoeuvrability and rate-of-climb ability. Richthofen had his D-1 painted blood red, as he did with all the planes he flew, to inspire his own pilots and to strike fear in the hearts of the enemy.

It was during his time with the flying circus that he set off for his last hunt on 21 April 1918. The quarry looked deceptively weak and ready for the trophy cabinet. A flight of Allied Sopwith Camels was spotted by Richthofen and his circus flying at low altitude over the fields of the Somme. They hadn't spotted the Red Baron's fighter group and, sensing an easy victory, he ordered an attack. They came in hard and fast out of the sun and into the Allied planes, tearing them apart. Richthofen separated a fleeing Allied pilot from his wingman and pursued him at very low altitude, both planes running fast through the low terrain. Richthofen continued to pursue his quarry even to the Allied lines and it was here he came unstuck, as an Australian machine gunner from the ground scored a lucky shot that hit Richthofen in the face. It is still a matter of controversy if the bullet killed him instantly or if his demise came from machine gun fire from the pursued Sopwith Camel pilot that forced him down. Australian soldiers found him in the mangled red wreckage of his destroyed machine and some reports say that before he died he uttered one word: "Kaput."

> The German command asked him to take a ground job because they feared for morale if he was killed. He refused

Richthofen was awarded full military honours by the Australian forces that found his body – his heroism was renowned even among Allied soldiers. On the memorial wreath the Allied troops inscribed the dedication: "To our gallant and worthy foe." The greatest knight of the sky was dead aged just 25.

Life as a knight of the sky

Physical hardship
The physical rigours of early-20th century flight were not for the faint of heart. There was no enclosed cockpit and pilots were forced to ply their trade in freezing conditions at stomach-churning altitudes. A level of physical fitness was also required to operate the gears and levers inside the plane and fire the jam-prone armaments.

Technology gap
Aircraft manufacture was still a pioneering industry during this period, which led to varying degrees of effectiveness in the air. The period known as bloody April in 1917 where over 245 Allied planes were shot down was due to the Germans developing the highly manoeuvrable and agile fighter the Albatros D.III, which put every plane the Allies had at a hopeless disadvantage.

Hero worship
The ideal of the flying ace downing enemy combatants in noble combat was born and exemplified during World War I. A strict pecking order of aces developed which often left raw recruits ostracised from their squadrons. The aces themselves became heroes and symbols to the troops fighting on the ground as well as national heroes, advertised on anything from wall posters to tobacco boxes.

Mental strain
Adding to the physical hardship, the mental strain of flying temperamental aircraft in freezing conditions with little chance of survival if the plane was hit affected pilots terribly during World War I. Violent trembling, extreme weight loss, night terrors and uncontrollable fits and spasms were common among the men of the air services of combatants from all nations.

The gentleman flyer
The informal 'gentlemanly' rules many of the top aces lived by reflected the ideals of the 'gentleman flyer.' Ace pilots often only engaged fighters when they had left the ground and were up in the air, in order to give them a sporting chance and ensure it was a 'fair fight'. If a pilot was killed in enemy territory they were given full military honours by the opposing side.

Defining moment

Fight of the aces
23 November 1916
Richthofen goes head to head with one of Britain's most famous fighter aces – Major Lanoe Hawker. Hawker was a top gun British fighter pilot who had won the Victoria Cross for shooting down three enemy aircraft during one sortie over Ypes. After a long duel with each pilot trying to gain the advantage, Hawker runs low of fuel and a dangerous chase to the Allied lines ensues. After one last brief skirmish, Richthofen's guns jam but not before he gets off one last burst. One of the bullets hits Hawker in the head, killing him instantly.



Wounded in action
During a confrontation with a formation of British FE2 fighter planes, Richthofen sustains a head wound. He manages to perform a controlled landing but is ill and off duty for several months afterwards.
6 July 1917

The red Fokker
Richthofen begins to paint his planes red from January 1917 onwards, partly to get recognised and partly out of remembrance for his old cavalry regiment. The first plane he paints is his Albatros D.III and then the deadly Fokker D-I triplane.
January 1917



High honours
After shooting down his 16th enemy aircraft, Richthofen is awarded Pour le Mérite or the 'blue max', the highest military honour a German serviceman can be awarded during this period. He assumes command of the elite Jasta 11 squadron the same month.
January 1917

The flying circus
With countless enemy kills under his belt, Richthofen is promoted to commander of the elite squadron Jagdgeschwader 1. It is popularly known as the 'flying circus'.
June 1917



Death of a knight
After chasing a Canadian pilot flying a Sopwith Camel over the Somme river, Richthofen is shot and forced to make an emergency landing, dying shortly afterwards.
21 April 1918

1918

© Alamy

Tour Guide
Medina

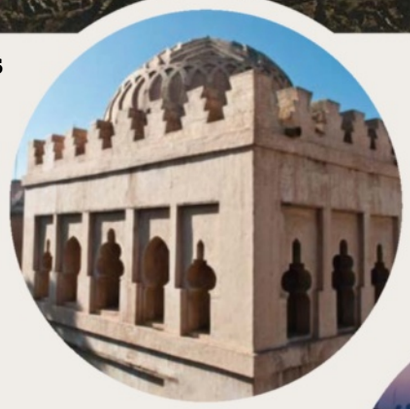
Destination
MEDINA, MARRAKESH



Once the centre of sprawling empires and the prize of warring dynasties, the medina district of Marrakesh is rich with cultural and historical heritage



Morocco's Marrakesh and its medina district (inset)



01 Ibn Tumart challenges the Emir

On 2 April 1120 CE the Almoravid Emir, Ali Ibn Yusuf, was confronted by the great scholar Abu Allah Ibn Tumart in the original mosque that stood here. Tumart demanded that the Emir purge the religous 'abominations' from his country. The Almohad rebellion that Tumart started eventually conquered Marrakesh and all the Almoravid mosques were levelled, but this original fountain still bears a dedication to Ibn Yusuf. The nearby rebuilt Almohad mosque, still the oldest in Marrakesh, is referred to as the Ibn Youssef Mosque.

03 The Marrakesh bombing in 2011

A popular destination for tourists thanks to its huge nighttime market, in April 2011 a bomb detonated in Place Jemaa el-Fna, claiming the lives of 17 people and wounding more.



02 REMEMBERING SIDI ABD EL-AZIZ

Sidi Abd el-Aziz is one of 200 holy men and women buried in Marrakesh and one of the city's 'seven saints' – the subjects of pilgrimages since the 17th century.

04 A victorious mosque

The largest mosque in Marrakesh, Koutoubia was built by the Almohads after demolishing the defeated Almoravid mosque and palace. The conquerors were so eager to establish their own religious mark on the former heretic stronghold that they began rebuilding their new Koutoubia shortly before it was finished. As it emerged it was misaligned towards Mecca by a few degrees.

Morocco and Marrakesh

Lending its name to the country for which it served as the capital at several points over the centuries, Marrakesh has a turbulent yet rich history including warring dynasties, flourishing trade and envious architecture. Each new family of rulers that has made their own mark on the medina, destroying and rebuilding to leave their own legacy. From the tribal berber dynasties of the Almoravids, Almohads and Merinides to the arrival of the Arabic Saâdians and the Alaouites, up until the 20th-century French colonial occupation, the city has been influenced many of history's great civilisations. For years it stood at the very edge of the Christian and Muslim worlds, accommodating the delicate relationship between Europe and the Far East.



08 Victory celebration

Though you can't tell from the ruins that have been left behind, El Badi Palace (meaning The Incomparable) was once a truly luxurious jewel of Marrakesh. Commissioned by Saâdian Sultan Ahmad al-Mansur in 1578, to celebrate his victory over the Portuguese in the Battle of Ksar El Kebir, it took a quarter of a century to complete the palace. A later sultan, Moulay Ismail, tore apart El Badi to build his own palace in his new capital of Meknes.

07 Finding the hidden Saâdian sultans

Undiscovered until 1971, the Saâdian tombs, in the royal kasbah area, are the last resting place of a majority of the Saâdian dynasty that ruled Marrakesh from 1554 until 1659. They house the remains of Mohammed ash-Shaykh, the first Saâdian sultan of Morocco, who fought campaigns against both the Christian Portuguese and the Ottoman Empire.

02

01

Start here

03



06 A ROYAL ENTRANCE

While the Bab er Rob was the official gateway to the city, the Bab Agnaou was built by the Sultan Yaacoub el-Manxour in 1185 as an entrance to the royal kasbah quarter.

05 In defence of the medina

It cost Ali Ibn Yusuf 71,000 gold dirhams, several million in today's money, to build the iconic 20-kilometre wall protecting Marrakesh. He commissioned its construction in response to the Almohad threat gathering in the nearby Atlas Mountains, led by Ibn Tumart. Though the Almohad army was defeated in the Battle of al-Buharia, as the besieged Almoravid force sallied forth from the city, they returned in 1147 CE under Abd al-Mu'min, who was the first conqueror to scale and overcome the substantial battlements.



End here

07

08







What if...
Germany had won the Battle of Britain?

THE BATTLE OF BRITAIN, UK, 1940

Written by Jonny O'Callaghan

STEPHEN BADSEY



Stephen Badsey is Professor of Conflict Studies at the University of Wolverhampton. An internationally recognised military historian, he has written or edited more than 90 books and articles. His writings have been translated into five languages and he appears frequently on television and in other media.

What would have happened if Germany had won the Battle of Britain?

Most people define winning the Battle of Britain as the defeat of RAF Fighter Command and achieving air superiority over Southeast England. That was considered the essential first step for the planned German invasion called Operation Sea Lion. However, they didn't only have to defeat Fighter Command; they would also have had to defeat the Royal Navy, which would have sailed into the English Channel and cut off the German invading forces. And that battle the Germans could not win. They had not nearly big enough a navy. The Luftwaffe could have attacked the Royal Navy but it couldn't be everywhere at once, so while it was doing that it couldn't be supporting the invasion. After three or four days the German force that makes it across the Channel and lands, and it's pretty certain they could have done that, has its communications across the Channel cut and runs out of fuel and ammunition. If you want an actual successful German invasion and a defeat of Britain, it can't be done purely in military terms; you have to look for some reason the British would have surrendered.

What were Germany's aims with the Battle of Britain?

The Germans were trying to do two things simultaneously with the air battle. One was to achieve aerial superiority over Southeast England, and they were getting close to that in the course of the battle. They had forced the RAF to abandon some of its critical airfields in Southeast England, and that's more important than it sounds, because these were pre-war established airfields. But [the Germans] were also working on a theory that was very popular before World War II, that bombing by itself would so frighten an enemy civilian population that they would rise in revolt and demand their government makes peace. Now, that theory turned out not to be true, even with the massive bombings that took place during this conflict, but nobody knew if that was true or not [at the time].

What was the turning point in the battle?

Critically, in the middle of the battle there was this German decision to switch from attacking the fighter airfields to bombing London. There's always been a strong theory and suspicion that cannot be proven that this was a fundamental error. It was based very much on the [mistaken] idea that Fighter Command had been worn out and that now was the time for the shock tactic of bombing the civilian population. One of the things they neglected and weren't very good at is what's called military intelligence, which is understanding what the other guy is doing, and they could never get an accurate count on how many aircraft the British actually had and what kind of losses they were suffering. One of the reasons they couldn't do that is that Fighter Command kept harbouring its reserves, feeding them into battle in small units, so the Germans thought RAF losses were much higher than they were. There's a lovely comment by one hard-bitten German fighter pilot towards the end of the battle, watching yet another RAF formation come up to meet them. He said over his radio [exhaustedly]: "Here they come, the last 50 Spitfires." It's got that kind of feel to it.

What would it have taken for Britain to lose?

First of all, at some unspecified time before the war, the Germans could have developed a real amphibious capability, which they didn't have. If the Germans had developed proper landing craft and all the doctrines and training that go with them so they could actually mount a major amphibious assault quickly and effectively with well-trained troops, that would have made a big difference. Then, as I said, the German Navy was much smaller than the Royal Navy but you can construct scenarios in which it's a bit stronger. They lose some ships in the invasion of Norway, and the British sank the French Mediterranean fleet when France surrendered in French North Africa. If that hadn't happened and the Germans had been able to get hold of the French battle fleet, it's still not

> “Regarding London, Churchill’s view was that if it came to that he was intent on making the Germans fight for it house to house”



If Germany had been victorious in the Battle of Britain Hitler planned to invade and Nazi soldiers could have been marching through the streets of London

"Germany might have made a war of conquest, attempting to seize the Americas as well as the US"

German chances. Then if the invasion does take place, you've got a matter of days to come up with some kind of political shock to convince a British government it has to surrender.

Would Britain have surrendered?
It's unlikely that would happen with Churchill as prime minister, but of course he nearly didn't become Prime Minister. When France collapsed virtually the day the German attack on France starts, 10 May 1940, Chamberlain resigns and Churchill becomes prime minister, but it was nearly Lord Halifax and he was a much less pugnacious person than Churchill. Whether with Halifax in charge of the government the British would have offered surrender just with the threat of a German invasion we don't know. It's a possibility, but [for Britain to lose] it needs to be that kind of thing; Britain needs to collapse in the way that France did in May and June 1940, as much a political collapse as a military one.


British troops just before D-day. If Germany had won the Battle of Britain the series of landings at Normandy would not have occured

Assuming the invasion did go ahead, what was Hitler's next move?
The British chiefs of staff had advised Churchill that if the Germans did get ashore in strength the army was not strong enough to defeat them and drive them back. The first line of defence of the British is something drawn halfway between the invasion area round about Dover and London which is called the GHQ Line [General Headquarters Line]. Regarding London itself, Churchill's view was that if it came to that he was intent on making the Germans fight for it house to house. So if you had this Battle of London, it would absorb a massive number of German troops, which was the intention.

Could Britain have held out?
Presuming the British don't surrender, the Germans would try to bypass London. The next main defensive line after that is for the industrial heartlands of the Midlands, the Stratford-upon-Avon canal, which runs roughly speaking southwest to northeast a short distance south of the Birmingham area. If the Germans go through that, the last line of defence is to the northwest of that, between Wolverhampton and Telford. If the British lose that, they are pretty well defeated.

Would the remnants of the British Army have fought on like the Free French Forces did in France?
What the 'Free British' would have looked like we don't know, but the Royal Navy would still be very much intact and you can envisage a scenario in which transports filled with troops and some civilians escorted by the Royal Navy actually head westwards in the expectation that they would be able to continue the war from the British Empire. In terms of Britain itself, in addition to the famous Home Guard, there were also small units that were effectively assassination squads. These were highly motivated people and some of them are quite surprising; George Orwell and Michael Foot were among the people who volunteered for this. Their job was essentially a suicide mission to try and kill the highest-ranking German they could find. That probably would have happened. So you would have probably had a British resistance to German occupation in the same way you got a French resistance.

With Britain defeated, what would happen next?
We can never be certain, but it probably means that Germany has won the war in Europe. It is hard to construct any reasonable course of action whereby the United States would become involved in a war with Germany, and it is incredibly hard looking at a map to see how military operations to liberate German-occupied Europe could have been mounted from the far side of the Atlantic. What would almost certainly happen next is what did happen; the following year [in 1941]

How would it be different?



German expansion
Hitler's march continues unabated as Germany invades Denmark and Norway.
April 1940

Battle of Britain
In the summer of 1940 the first major campaign to be fought in the air begins. The Luftwaffe and RAF planes meet in the skies as the Germans target bombing radar stations and airfields.
July 1940

Targets switch
Believing the RAF to be on the brink of defeat, Germany switches their attacks from airfields to major cities.
7 September 1940

Real timeline

1939

War declared
An increasingly aggressive and confident Germany ignores warnings and invades Poland on 1 September. Two days later both Britain and France declare war.
01 September 1939



New prime minister
Neville Chamberlain, the prime minister who had believed in appeasement, resigns. Winston Churchill, the former First Lord of the Admiralty, is chosen as his successor.
10 May 1940

France surrenders
France signs an armistice with Germany. Shortly after France's surrender, Churchill famously says: "...the Battle of France is over. I expect that the Battle of Britain is about to begin."
22 June 1940

Real timeline

Alternate timeline

Attacks continue
Germany decides to keep attacking airfields and further weaken the RAF. Two days later, they make plans to invade mainland Britain.
7 September 1940

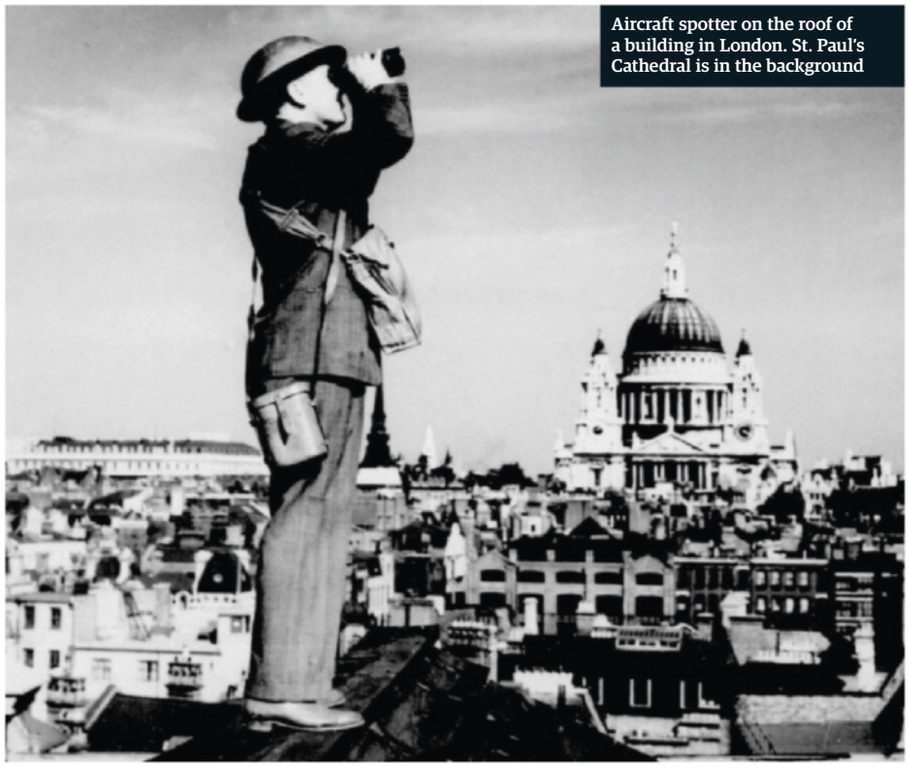
Hitler's Germany and the Axis members would have attacked the Soviet Union. That was always the big Nazi ambition and to that extent the war in the West was viewed almost as not quite a mistake, but something that they had not been aiming for. Without a hostile Britain remaining to the West, the German attack on the Soviet Union is more likely to succeed.

Would Japan and America still have gone to war?
Whether the Japanese would have attacked the U at Pearl Harbor is extremely difficult to answer, but it doesn't look as if this scenario makes it less likely. There probably would have been some kind of Japanese-American Pacific war, which would probably have played out pretty much as it did; the Japanese didn't really have a chance of winning that war. But that would have been a separate war. In terms of Europe, if the Battle of Britain is won [by Germany] and Britain is invaded successfully, the next German attack on the East on the Soviet Union establishes the German Empire throughout Europe.

Would Germany and the US ever have come to blows?
Most historians believe that the ultimate objective of Hitler was world domination. So after establishing this great European power and absorbing within it not just the French colonial empire but the British colonial empire, the largest empire in history, then at some point in the future Hitler's Germany might have made a war of conquest, attempting to seize the Americas as well as the US.

Why do you not think it was possible?
It's a matter of global transport. For Germany to build such a global transport system is a step too far in terms of our speculation. What they could have done, and people were very concerned that they might have done, was build an Intercontinental Ballistic Missile [ICBM], capable of reaching one continent from another. If the Germans could have and did build a workable atomic bomb - which is possible - and if they built an ICBM to fire it, they could have hit American cities which would have been hit with bombs equivalent to those that hit Hiroshima and Nagasaki. That is plausible.

What might things have been like in the modern day?
As a personal view, I don't believe in economic terms that the Nazi state was viable for more than a few years. In order to feed the German people they were basically stealing the grain supplies from every country they invaded, and I just don't believe it's viable. It would have just collapsed in revolution in a few years' time, having done a great deal of damage.


Aircraft spotter on the roof of a building in London. St. Paul's Cathedral is in the background

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- **Battle of Britain Day** The Luftwaffe suffers their greatest losses since mid-August. A reconsideration of tactics is needed and, two days later, the planned invasion of England (Operation Sea Lion) is cancelled. **15 September 1940**
- **Operation Barbarossa** Hitler decides to attack the Soviet Union, despite still having Britain as a foe in the West. The decision will ultimately prove disastrous. **22 June 1941**
- **Germany on back foot** With the arrival of the United States into the war, a belligerent Britain and a stubborn Soviet Union, Germany's prospects of winning the war dwindle. **December 1943**
- **D-day** The Allies stage a series of landings at Normandy, ultimately wrestling control of Western Europe back from Germany. **6 June 1944**
- **Operation Sea Lion** With the RAF crippled and the Royal Navy kept at bay the invasion of Britain, Operation Sea Lion, begins. **1 October 1940**
- **Invasion of the Soviet Union** Hitler carries out Operation Barbarossa. With no hostile Britain in the West, he is able to focus the majority of his forces on the Soviets and successfully invade. **22 June 1941**
- **America under attack** Germany builds Intercontinental Ballistic Missiles and atomic bombs. They strike major US cities. **1944**
- **Victory in Europe Day** The war comes to an end with the Allied forces accepting the unconditional surrender of Nazi Germany following the fall of Berlin and Hitler's suicide. **8 May 1945**
- **Royal Navy subdued** The French Mediterranean fleet has not been sunk and the German Navy manages to prevail. **September 1940**
- **Britain surrenders** By the end of the month, despite fighting in London continuing, Germany controls large parts of Britain, including the industrial heartland in the midlands. Britain has no choice but to surrender. **31 October 1940**
- **German Empire** Nazi Germany controls almost the entirety of Europe, in addition to absorbing the empires of Britain and France and in turn creating a new formidable global empire. **December 1943**
- **Nazi victory** The remaining Allied forces accept defeat and surrender, enabling the Nazi empire to claim victory in Europe. The war with the United States rages on as Hitler attempts to control the world. **1945**
- **Empire crumbles** Despite their victory the Nazi empire begins to crumble under its sheer weight of people to feed and states to keep control of. **1950**

© Alamy, Corbis, Lukas Balandis





Eye Witness

THE FALL OF BAGHDAD, IRAQ, APRIL 2003

Written by Chris Fenton

> “The American soldier thought a photographer in one of the rooms above had a gun and fired at him”

Dust and sand flew through the air on the road to Baghdad on another red-hot day in March 2003. Only a few cars were heading into the city; most of the traffic was trying to get as far away as possible. Åsne Seierstad was among the few making her way into Baghdad and recalls: “I’d managed to drive myself in [to Iraq] posing as an aid worker with the Norwegian Christian Council in January building water dams. But all journalist visas were revoked in the build-up to the war and I had to bribe someone with five thousand dollars to get another one.”

There had been debate among the ejected journalists who had assembled on the Jordanian border about whether to risk going back into Iraq with the war looming. Seierstad made the dangerous decision to re-enter the country because her news stories were not being reported on by the Iraqi information ministry: “They [the Iraqi government] would read the papers like *The Times* in their foreign embassies and report back, I was in a lucky situation because there was no embassy in

ÅSNE SEIERSTAD



Åsne Seierstad is a Norwegian foreign affairs correspondent who has reported from a number of war zones throughout the globe, including Afghanistan, Chechnya and Iraq, for various news agencies. She has written a number of books about everyday life in these places including the international bestseller *The Bookseller of Kabul*.

The fall of a symbol

CST

03-00am — **US marines take Saddam City, a suburb of Baghdad**



07-00am — **Iraqi forces flee**
All Iraqi security officials flee Paradise Square in Baghdad and with no government officials and uncertainty reigning, sporadic looting breaks out

11-00am — **Press at The Paradise begin making their daily reports and report that troops are close to entering the city**

01-00pm — **Rumours circulate that the Americans are hours away and the remaining world press begin reporting live**

04-30pm — **Square taken**
A number of US tanks enter the square and begin taking up strategic defensive positions, although they meet little resistance

05-00pm — **US commanders hear Iraqis want to topple Hussein's statue**



05-10pm — **A sledgehammer 'slips off' an American recovery vehicle in the square and is given to the crowd to topple the statue**

05-25pm — **Interest in the statue begins to ebb away and the crowd begins to disperse as the statue refuses to fall**

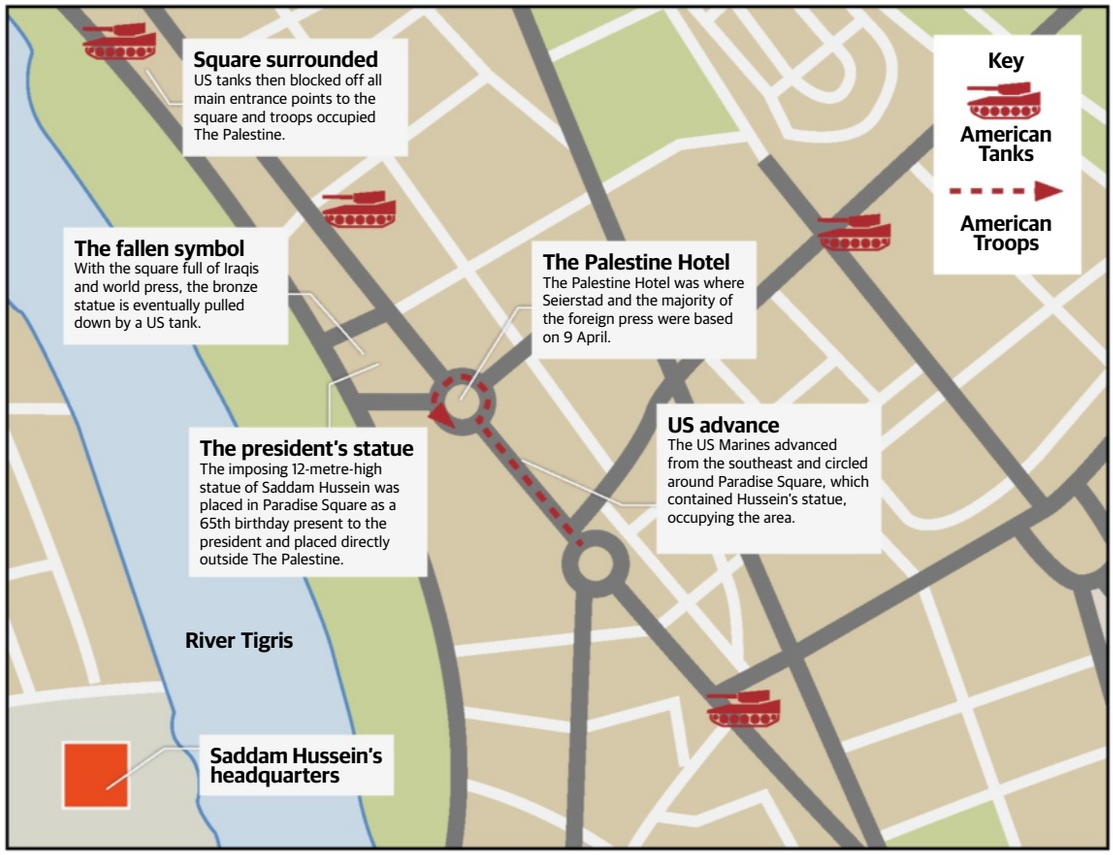
05-30pm — **Stars and Stripes**
A US soldier puts an American flag onto the statue



05-40pm — **A US Army psychological warfare unit arrives and tells the marines to take down the American flag and put up an Iraqi one**

05-45pm — **The US marine colonel in charge feels he would be a 'buzzkill' if he didn't help the crowd pull down the statue and orders the 88 to help**

05-50pm — **Dictator toppled**
The US tank crew is given the green light to bring down the statue. It falls shortly afterwards, acting as a symbol of the fall of Saddam Hussein in Iraq



Norway so I could get a visa."

As the war officially started on 19 March through 'shock and awe', the American military advanced at breakneck speed towards Baghdad, leap-frogging Iraqi defenses in an effort to end the conflict as quickly as possible. Seierstad was now in the middle of key Hussein-regime targets at the heart of Baghdad, including the presidential palace complex and ministry buildings essential to the war. She was doing her best to conduct interviews with Iraqi civilians and says: "As the war started, there was still total control of the population by the regime. It was strange, in the nights they [the Americans] would bomb and during the day it was daily life. The people were ordered out, they were not allowed not to go to work and the schools were open."

The oppressive restrictions imposed on the lives of the Baghdadi citizens also applied to foreign journalists. Every step Seierstad took in the city was monitored by Hussein's Ba'ath party information officials. After a particularly heavy night of bombing she managed to convince her minders to let her speak to some school children in downtown Baghdad: "The children talked in propaganda speak, 'we're not scared, we are Iraqis for the president'. Interestingly, very small children, because they were outside of this propaganda, talked about fear and their greatest fear was to lose a parent or to be covered by sand or concrete from collapsing buildings."

The Americans finally entered the city on 8 April and were pushing towards Seierstad's hotel, The Palestine, situated outside Paradise Square, known to the locals as Firdos Square. The Palestine was at the heart of Baghdad and a key American objective. It was also where Hussein's imposing 12-metre statue of himself was located, which served as a symbol of his power within the city. Seierstad recalled: "They came in from the south and just took that part of the city. There was no real fighting, the Iraqi officials and security agents just fled – there was some sporadic fighting but no real resistance."

That afternoon Seierstad was working on a news story in her hotel room when she heard a loud crashing noise and felt the whole building shake. American tanks on a bridge close to The Palestine had fired a tank round into the building: "I heard a big boom, I got a telephone call to say that the hotel had been hit – the American soldier thought a photographer in one of the rooms above had a gun and fired at him." She ran down the hotel stairs to get out of the building and watched as bodies were being carried out: "We saw people being carried out under blankets. I think there were two or three people killed in the blast."

The next morning Seierstad ventured downstairs to start trying to find out what had happened the day before. She immediately realised that all the Iraqi soldiers, officials and regime thugs had disappeared.

"It was strange, in the nights they [the Americans] would bomb and during the day it was daily life"



American Marines Corps prepare to enter one of Saddam Hussein's palaces in Baghdad a month after the invasion



US forces began the second Gulf War with the military operation 'shock and awe'

Even the hotel staff had left – there was no one around to serve breakfast. The assembled media representatives left in the hotel then heard the rumblings of distant tank tracks and gathered on the balconies overlooking Paradise Square. The Americans had finally arrived: "The big takeover came when they [the Americans] came in with their big tanks straight into Paradise Square with the statue, near The Palestine."

After the Americans had taken up defensive positions at the square's junctions Seierstad ventured outside and into the square: "I was there the whole time with three Iraqi friends, two guys and a girl, watching the Americans." News networks would later report that thousands of people had gathered to watch the Americans topple Hussein's statue, but Seierstad remembers differently and insists: "I would have to say only a few people were around, maybe 100 or 200, it wasn't at all crowded." As the Americans moved in some of the Iraqis began climbing on the statue, trying to bring it down: "There was a big muscular Iraqi guy like a body builder showing off on the statue. He had a rope – I'm not sure if the Americans had given it to him – which he had round the statue's neck."

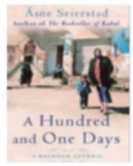
The crowd began to throw rocks at the statue, which left the Americans unsure how best to react. Gunnery Sergeant Leon Lambert, tank commander of a US Marine M-88 recovery vehicle in the square asked his Captain if they should help the crowd tear down the statue. The initial answer given to him was "no way" but after the crowd began to ebb away and the presence of the media started to make itself known, the decision was made to help the crowd.

Seierstad and her three Iraqi friends continued to watch the events and she explains: "Some American soldiers climbed up and put an American flag on his head but then took it down and tied a rope around his neck onto one of their tanks." The crowd cheered as Lambert's vehicle revved up and began pulling the statue down. Seierstad recalls: "Even with the tank it took several minutes to get the thing down. Once it was down you had Iraqis jumping on his head and someone had a hammer and was hitting it."

Once the statue was down and the cheers from the crowd erupted, Seierstad began taking reactions from her Iraqi friends: "So many people had reasons to be happy that he was gone and one of the guys I was with was crying out of joy, he was Shia and he was crying out for joy that the dictatorship was over." This was contrasted with her second male friend who was crying for a completely different reason, "The other one was a Sunni and he was crying out of shame. 'How could the Americans do this to us? They took over our country!' In time the two men would become enemies."

Finally, she turned to her female friend to ask her for her reactions: "I asked her, what do you feel? She said, 'I do not feel anything, I don't dare to feel anything.'" The segregation of Iraqi society, which would plague the quest for peace in the country for the next decade, had already begun. With the statue down and the Americans setting up command posts all over the city, Seierstad gauged the mood of the Baghdad citizens: "I think for many people it was like, he's gone, we should have done it ourselves but he's gone. I think they hoped that everything was going to be fine and the Americans would help. That day there was joy in the streets."

During Seierstad's last days in the city she witnessed the aftermath of the fall of Baghdad. The destruction of Hussein's statue symbolised the removal of his oppressive rule in the country. But with this oppression gone, anarchy and looting spilled out onto the streets. The only building being guarded around the clock by the American force was the Iraqi oil ministry. She saw Iraqis pleading with American soldiers to protect them: "Many people would run up to the Americans and say 'protect us, protect us, we can't sleep at night because of the criminals that are coming.' The American soldiers would reply, 'That's none of our business.' They had planned for war, they hadn't planned for peace."



A Hundred and One Days, Åsne Seierstad's time in Iraq, including the origins and aftermath of the Paradise Square incident, is chronicled in *A Hundred and One Days*, available now at www.amazon.co.uk.

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Origins and aftermath

The origins of the second Iraq war can be found in the tense political situation after the 9/11 attacks in 2001. US president George W. Bush declared a 'war on terror' and singled out Iraq, among other countries, as a hotbed of terrorist activities. It was widely thought by US and UK intelligence agencies that Saddam Hussein, the Iraqi dictator, was harbouring weapons of mass destruction. While these claims were never proved and Bush's case for war was defeated in the UN, he took the decision to invade Iraq anyway, beginning operations on 20 March 2003. In its aftermath, mass looting and criminal activity swept through Baghdad as the US refused to get involved in civil policing. The only guarded building was the oil ministry, lending weight to suspicions that the war was an excuse for the Bush administration to take over Iraq's oil concerns.



The falling of the statue was seen live by millions across the world

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Bluffer's Guide
Mongol Empire

EASTERN EUROPE AND ASIA, 1206-1368

What was it?

The Mongol Empire at its height is still the world's largest contiguous empire in that its territories were linked by land stretching from Southeast Asia to Eastern Europe. Founded by Genghis Khan in 1206 and conquered by a highly skilled army that lived and fought on horseback, it splintered under his successors before finally ending in 1368.

How did it start?

12th-century Mongolia was divided up into various nomadic tribes. Temujin succeeded his father as khan – leader – of the Borjigin, and united the Mongols through political alliances and brute force. In 1206 Temujin was declared Genghis ('great') Khan.

Where did they conquer?

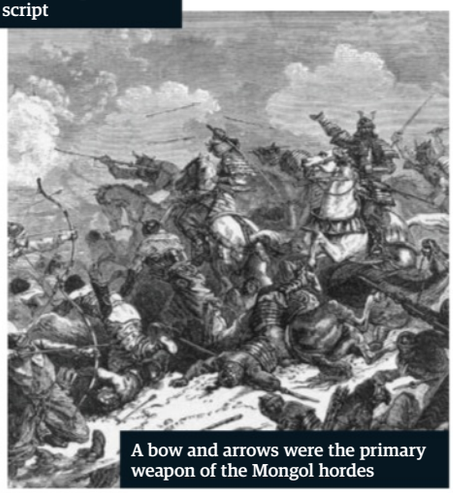
Under Genghis Kahn, the Mongol Empire expanded aggressively into the neighbouring Chinese kingdoms, other Central Asian tribal lands, the Persian Khwarezmia dynasty, and even the fringes of Europe in what is now Russia and Bulgaria. Under his successors it would stretch even further.



The seal of Güyük Khan, using the classical Mongolian script

A new revolution

Genghis Khan encouraged religious toleration, exempted the poor from taxes and introduced literacy. His law code, the Yassa, suppressed tribal warfare and imposed strict discipline, with severe penalties for rape and murder. Key to the Yassa was that leaders share the same conditions as their men and take only an equal share of the loot.



A bow and arrows were the primary weapon of the Mongol hordes

Firing from the hip

Six out of every ten Mongol warriors were armed with a curved composite bow made from bamboo. A key design innovation and their unique drawing technique made it easier to fire quickly, while the stirrups on their horses – a Chinese invention – allowed them to steer with their feet and fire arrows on the move, granting them advantage on the battlefield.

A surprising meritocracy

Genghis Khan used the Mongols' self-sufficiency as nomads to his advantage, promoting capable soldiers to leadership over tribal nobility. Commanders were free in how they carried out their orders and often adapted their strategies in the field, allowing them to overcome larger and better armed forces.



The Mongols were arguably the world's greatest warriors on horseback and their manoeuvrability on the field was a major advantage in battle



A statue of Ögedei Khan

Great leaders

When Genghis Khan died in 1227 the Mongol Empire was double the size of the Roman Empire. He had declared his third son ruler and after his election was confirmed by the tribal council in 1229, Ögedei Khan resumed his father's mission of conquest, invading central China, Korea, northern India, Poland, Hungary and many more.



Messengers could travel up to 125 miles a day

Message system

While not the world's first relay system, the Ortoo was completely unprecedented in scale and efficiency, sending messages up to 125 miles a day. Riders would gallop between regularly spaced relay stations, changing horses and collecting supplies at each one. The upkeep of the Ortoo was enshrined in the Yassa and was paramount to the security of the Mongol Empire.

Key figures

Genghis Khan
1162-1227
The founder of the Mongol Empire, relentless warlord and architect of a new society.

Ögedei Khan
1186-1241
Genghis' son took the Mongol Empire to its greatest East-West extent and created a new regional bureaucracy.

Güyük Khan
1206-1248
Son of Ögedei and grandson of Genghis, Güyük taxed, drank and conquered equally as heavily as his grandfather.

Möngke Khan
1209-1259
Descended from Genghis' fourth son, Möngke reformed the economy and reeled in the Mongol nobles.

Kublai Khan
1215-1294
Younger brother of Möngke, Kublai became Emperor of China in 1271, founding the powerful Yuan Dynasty.

Major events

Genghis Khan rises
1206
Temujin unites the tribes, beginning over a century of violent conquest and radical social change.

Mongols turn west
1218
Mongol envoys are killed in Persia and Genghis Khan turns his attention west for the first time. His envoys would be avenged many times over.

Ögedei Khan dies
1241
The Khan's death halts the invasion of Hungary as years of in-fighting take over.

Japan resists
1274
The invading Mongol war machine is pushed back into the sea by Japanese samurai and a helpful typhoon.

The Empire falls
1368
China's Ming Dynasty overthrows the Mongol Yuan Dynasty and brings the Mongol Empire to an end.

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MANDELA'S REVOLUTION

Before he became a prisoner of conscience and a beloved Nobel laureate, young Nelson Mandela abandoned the ideals of non-violence for a guerilla revolution

Written by Dave Roos



On 26 May 1948, roughly one million white South Africans went to the polls to cast ballots in parliamentary elections. Their decision was between the incumbent Union Party, which had thrust South Africans into a wildly unpopular World War II, and an upstart coalition of right-wing nationalists called the Reunited National Party (NP). Although no blacks and few mixed-race South Africans participated in the election, the vote was a naked referendum on race. D F Malan, the NP leader, ran on a platform of institutionalized apartheid or 'apart-hood', an aggressive credo of racial segregation and white dominion. Jan Smuts, the sitting prime minister, fumbled over the 'black question', proposing a series of murky ideas involving racial integration. White Afrikaners, the descendants of Dutch-speaking settlers who fought two bloody land wars with the British, were sick of supporting the Crown and saw the Union Party as the queen's lackeys.

The laws that divided a country

Educational apartheid

Education under apartheid was separate and wildly unequal. Under the 1953 Bantu Education Act, schools and universities were labelled either 'white' or 'tribal' and all were put under direct government control. Spending on black schools was one-tenth of that invested in white education, resulting in hundreds of black schools without electricity or running water. National Party leaders saw no need to spend money on an education that black South Africans would never use. A 1974 law forcing black students to learn Afrikaans as well as English was the spark that ignited the 1976 Soweto Uprising that resulted in hundreds of deaths, many of them high school students.

Medical apartheid

From the early days of Dutch and British colonial rule, there were two medical systems in South Africa: one for whites and one for blacks. The segregation of hospitals was so entrenched by 1948 that the National Party didn't need to write it into law; it was already the policy at every public medical facility in the country. When medical facilities were finally integrated in 1990, only 10 per cent of South Africa's five million whites were using public hospitals compared with 90 per cent of the country's 27 million blacks. The result was a huge surplus of beds in white hospitals and dangerous overcrowding in black facilities.

Sexual apartheid

Fears surrounding sexual 'impurity' have always fuelled the argument for segregation of the races. In white South Africa and elsewhere, the black man was portrayed as a deviant sexual animal with an insatiable appetite for white women. The South African parliament passed the Immorality Act in 1927, outlawing sexual relations between whites and blacks with a punishment of five years in jail for men and four years for women. Mixed marriages were banned outright in 1949 and amendments to the Immorality Act in 1950 and 1957 extended the prohibition to all coloured races and increased the jail time to seven years for anyone convicted of 'immoral or indecent acts.'



A young black man, in an act of resistance to apartheid, rides a bus reserved for whites



Nelson Mandela grabs some refreshments during a break in the Treason Trial in Pretoria, 1958

"Mandela was handsome and unabashedly vain, insisting on the best suits from exclusive white tailors"

It's no accident that apartheid is an Afrikaans word – racial segregation was key to Afrikaner nationalism and its fervent belief in a white state.

Apartheid won the day. The conservative NP joined forces with the ultra-nationalist Afrikaner Party to take an eight-seat majority in parliament and Malan ascended to prime minister. Afrikaners saw the victory as nothing short of a declaration of independence, from Britain and from blacks. "For the first time since Union," declared Malan, "South Africa is our own." By 1948, the oppression and subjugation of the black majority in South Africa was already a centuries-old story, but the rise of apartheid would further raise the stakes and set the scene for a confrontation between the government and those who believed that their country should be for all – people like Nelson Mandela.

Mandela was speechless when he first heard the election results. The 29-year-old activist and law student had believed that South Africa was on the cusp of a very different kind of change. In America, legal challenges to segregation were being organised and in India Ghandi and his followers had used the tools of non-violent resistance and civil disobedience to overthrow centuries of British rule. Even with the NP in power, Mandela refused to assume the worst from the nationalist regime, but this meant that he initially underestimated the fervour with which the white power structure would clamp down on black freedoms.

Raised in a tiny Xhosa village in the remote Transkei region, Mandela had arrived in the black townships of Johannesburg only seven years before those fateful 1948 elections, a college dropout escaping an arranged marriage. After a brief stint as a night watchman in the mines, Mandela the country boy had the good fortune to meet Walter Sisulu, a young real-estate agent who would grow to become one of Mandela's greatest mentors, supporters and, ultimately, his prison companion. Sisulu got Mandela a job as a clerk in a progressive Johannesburg law firm, one of the few that served both black and white clients and even introduced him to his future wife, when Mandela met his young cousin Evelyn; the couple married in 1944. It was in Sisulu's home in the black suburb of Orlando where Mandela first met the outspoken Zulu activist Anton Lembede, who would recruit the young idealist studying for a law degree and dreaming of his own practice to an organisation that would shape the rest of his life: the African National Congress (ANC).

The ANC was founded in 1912 to unify feuding African tribes in the struggle for black rights in the newly christened Union of South Africa. Decades before apartheid, the small, underfunded organization fought racist laws like the Urban Areas Act of 1923, which forced all black men to carry passbooks proving their identity. Failure to show your pass when entering a white district meant arrest and expulsion from the city. Right from the formation of the ANC there was internal debate over the most effective way to fight for change. In 1919, the ANC supported a militant strike of

70,000 miners north of Johannesburg, which was ultimately crushed by police and armed white civilians. In the aftermath, the ANC leadership chose a more diplomatic path, but these efforts were equally fruitless.

The ANC languished through much of the Twenties and Thirties as a stuffy, ineffective old-boys club. Anton Lembede planned to change all of that. He recruited Mandela and Sisulu to help him found a new youth wing of the ANC, a radically rebooted civil-rights organisation dedicated to the ideals of African nationalism. The group called for taking the fight to the streets in mass demonstrations and coordinated acts of civil disobedience. ANC president Alfred Xuma appreciated the enthusiasm of the young firebrands, but didn't want to scare off his supporters in white society as he was still trying to play the political game.

Despite some resistance from the ANC's old guard, the ANC Youth League officially launched in April 1944 with Lembede as president and Mandela, Sisulu and Oliver Tambo – a brilliant young teacher and organizer that Mandela knew from his school days – on the executive committee. Mandela wasn't a leader yet, just a tall, whip-smart activist swept up in the infectious personality of Lembede, the camaraderie of his friends, and the justness of the cause. The Youth League grew in prominence and influence within the ANC, but Mandela and his ideologue companions weren't the only organisation vying for the minds and hearts of oppressed South Africans. Communists and Indian groups were staging their own strikes and mass actions and recruiting some of the brightest young black activists to their cause. Mandela counted communists and Indians as friends, but fervently opposed any attempt to muddy the clear nationalist agenda of black Africans with 'foreign' ideologies.

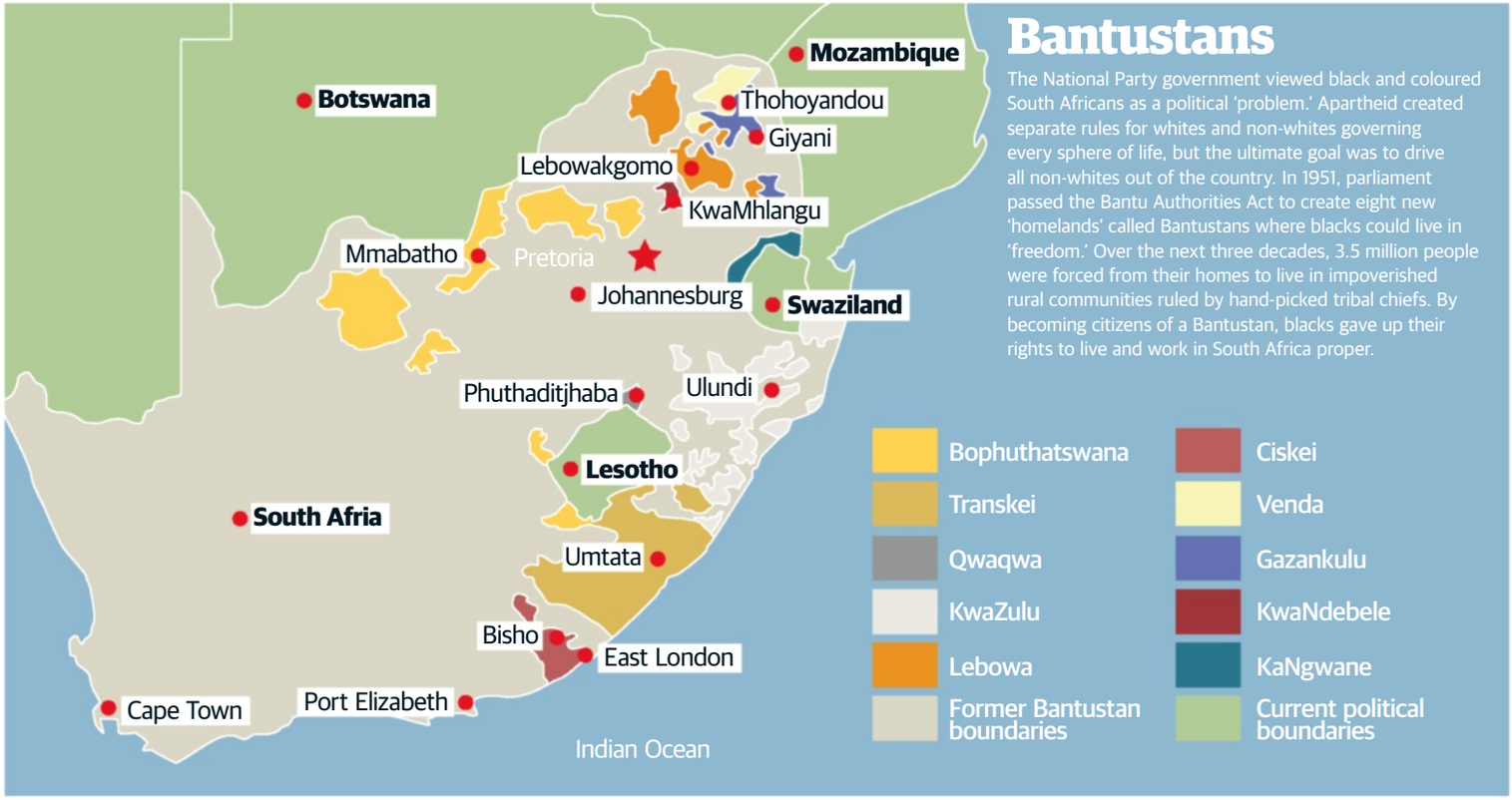
Then came 1948 with Malan and his National Party coalition sweeping to power on a platform of harsh racial segregation. While the Youth League and ANC leaders quibbled over joining forces with rival opposition groups, the NP regime set out to legalise a far-reaching system of institutionalised apartheid. Malan and his ministers set the groundwork for a nationwide system of racial classification. Every citizen would be categorised as white, black, coloured or Indian and required to live and work in racially 'pure' sections of every city.

As the full scope and intensity of apartheid law became clear, Mandela and his Youth Leaguers acted with a new urgency. Together, they drew up plans for an ambitious Programme of Action. Despite the Youth League's resistance to foreign influence, the Programme of Action was inspired by passive resistance campaigns of the Indian Conference in 1946 and mine strikes organised by the communists. The Programme of Action called for an end to passive negotiation with the enemy and the launch of an active resistance campaign using tactics of non-violence, civil disobedience, boycotts and strikes. Mandela and the Youth League were vehement about non-violence as the only viable force of opposition. They knew that any attempt at armed insurgency would be brutally crushed by the regime and pave the way for even harsher apartheid restrictions. Mandela believed that passive resistance could apply the political and moral pressure to topple tyranny.



Mandela was a staunch critic of apartheid and gave many speeches detailing its injustice

The annual ANC conference in 1949 marked a dramatic shift from the ANC as an association of old-guard liberalism into a radical revolutionary machine. The Youth Leaguers staged a coup, deposing the staid ANC president Xuma with a no-confidence vote and replacing him with a hand-picked successor. Mandela's good friend Sisulu was elected secretary-general of the revolutionised ANC and Tambo and other Youth Leaguers were called to executive roles. Mandela would soon join them on the ANC's front lines.



Today's public perception of Mandela is of a patient peacemaker and master strategist who wrought unthinkable concessions from his worst enemies and displayed amazing forgiveness towards them. However, it is worth noting that the Mandela of the late Forties and early Fifties was a mere player in a much larger struggle for black freedom – but that's not to say that he didn't stand out. At 183 centimetres tall (6 feet), he towered over the other black intellectuals, jazz musicians, artists and activists packing the thriving cultural Johannesburg district of Orlando West. Mandela was handsome and unabashedly vain, insisting on the best suits from exclusive white tailors. He ran daily and trained as a boxer to improve his strength and physique, which became imposing.

Friends and associates from those early days describe him as supremely confident and charming, but also somewhat distant and aloof. He didn't drink with the other activists in the raucous underground bars called shebeens and spoke with a reserved formality fitting of his chiefly upbringing in the Transkei. But Mandela's polite formality belied an innate fearlessness. The same fearless streak that drew him into the boxing ring would suit Mandela well during the increasingly heated opposition to the apartheid regime.

In 1951, Mandela was elected national president of the Youth League, his first taste of real power. At the ANC convention, Mandela's friend Sisulu, still the secretary-general, proposed a non-violent Defiance Campaign against the flood of oppressive race laws. The ANC would demand that the government repeal certain laws that made black South Africans feel like prisoners in their own country. When the regime refused, they would take to the streets in mass actions of passive resistance and civil disobedience. By this point, both Mandela and the larger ANC had abandoned their fierce African nationalism and embraced the idea of a united front against apartheid that included a coalition of leading communist and Indian opposition groups. When Mandela spoke of South Africa's future, he spoke of freedom for all "non-European" people, not just the black majority.

Mandela had high expectations for the Defiance Campaign and offered to serve as Volunteer-in-Chief. In this role, he travelled for months across black South Africa, knocking on doors and giving speeches to rally the masses to powerful acts of civil disobedience. The plan was simple; to organise groups of people to peacefully violate minor apartheid laws like curfew, get arrested and clog the prisons with the cause. The Defiance Campaign lasted six months, during which more than 8,000 people were arrested and jailed for non-violent acts of civil disobedience. Getting arrested became a badge of honour. Membership in the ANC exploded and Mandela was awarded much of the credit for the best-organised and most effective campaign in ANC history. His standing continued to grow.

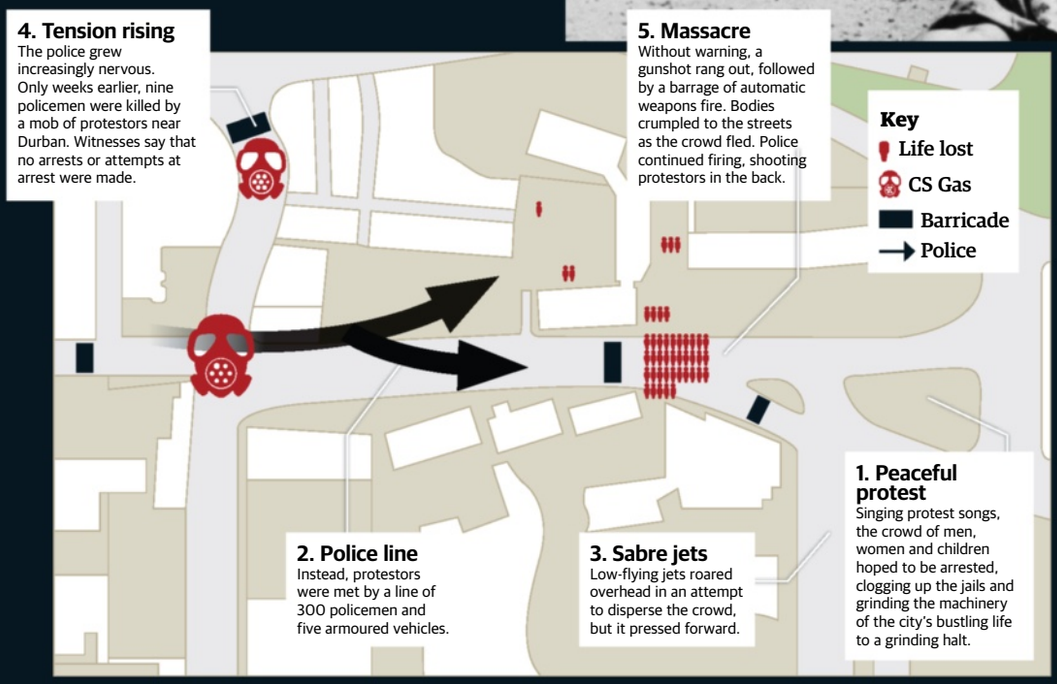
However, the celebrations were short-lived. The National Party responded to the insolence of the

The Sharpeville Massacre

The passbook was one of the most hated signs of white rule in apartheid-era South Africa, with all black people required to carry and present the ID to authorities. The ANC decided to hold a mass demonstration against the pass on 31 March 1961, but a splinter group called the Pan Africanist Congress (PAC) wanted to steal the ANC's thunder. The PAC hastily organized its own non-violent anti-pass demonstration on 21 March, calling for supporters to leave their passbooks at home and march on police stations to be arrested en masse. The PAC was less influential than the ANC, but organisers went door-to-door on the morning of 21 March, conscripting people to join the cause. By midday, a crowd of roughly 5,000 demonstrators marched on the Sharpeville police station south of Johannesburg.



The aftermath of the Sharpeville massacre in which 69 people lost their lives

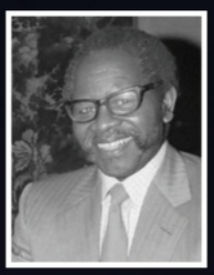


"By midday a crowd of 5,000 demonstrators marched on the Sharpeville police station south of Johannesburg"

Aftermath

Sixty-nine people were killed at Sharpeville and 180 wounded. Rather than admit fault, the government banned public gatherings, outlawed both the PAC and ANC, and passed a law that indemnified all police from civil lawsuits. In 1996, Mandela chose Sharpeville as the site to announce the signing of South Africa's first democratic constitution, and in 2012, work was completed on a memorial garden that contains the names of all who lost their lives.

Key players in the battle for South Africa



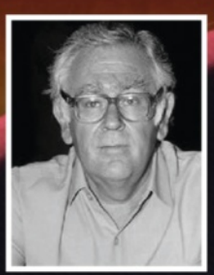
Oliver Tambo

Oliver Tambo was a lifelong leader of the ANC and one of Mandela's most loyal partners in the fight against apartheid. With Mandela, Tambo helped found the ANC Youth League and create the 1949 Programme of Action that transformed the ANC from an isolated political organisation into a radical liberation movement. Tambo and Mandela founded a law firm to advocate for the poor and were arrested countless times for staging protests and breaking apartheid laws. After the 1960 Sharpeville Massacre, Tambo and the ANC went into exile, forging key partnerships with other African nations. Tambo headed for London to mobilise opposition to apartheid. He lived there until he retuned to South Africa in 1991, to attend the first ANC national conference inside South Africa in three decades, where he was elected National Chairperson. He died from a stroke in 1993.



Daniel Francois Malan

DF Malan was a leading figure in the National Party's rise to power in South African politics and a founding father of apartheid. An Afrikaner, Malan fought hard for the rights of white South Africans, both against the remnants of Dutch and British colonial rule and the black 'natives.' Malan was the first editor of *Die Burger*, the NP newspaper, and held high government posts when the party seized power in the Twenties. Malan defected to form his own 'purified' nationalist party, campaigning on a platform of institutionalised apartheid in 1948, winning 86 of the 150 seats in parliament. During his six and a half years as prime minister Malan passed numerous apartheid laws and when he eventually retired in 1954, aged 80, apartheid had been firmly established and his successors carried on down the same path.



Joe Slovo

The Jewish communist was a close ally of Mandela and a commanding officer in the Spear of the Nation. Slovo first met Mandela at Wits University, when a young Mandela wanted nothing to do with communists and other 'foreign' influences. The two ended up fierce allies in the fight of 'the people' against the oppressive rule of apartheid. Both men were repeatedly arrested and banned from public appearances and went underground to plan acts of sabotage against the regime. When Mandela was imprisoned, Slovo went into exile in Britain and elsewhere, returning in 1990 to negotiate an end to apartheid.





Hendrik Verwoerd

Known as the chief architect of apartheid, HF Verwoerd served as minister of native affairs under Malan and eventually as the seventh prime minister of South Africa. As minister of native affairs, Verwoerd was instrumental in crafting the most insidious apartheid laws, including the Population Registration Act, the Group Areas Act and the Pass Laws Act. As prime minister, he engineered the forced relocation of blacks in 'homelands' and the reclassification of white South Africa as its own Republic. After surviving two bullets to the face in 1960, Verwoerd was fatally stabbed six years later.



opposition with mass arrests — Mandela included — on charges of 'communism'. Found guilty, the men received a suspended sentence of nine months of hard labour, which they never served. However, the government imposed strict bans on Mandela and 51 other ANC leaders. They were forbidden to attend meetings with more than one person or even leave Johannesburg without police permission. Meanwhile, parliament passed new laws against deliberate lawbreaking carrying sentences of years in prison and even flogging - a punishment that illustrated just how archaic the government was.

The bans effectively sidelined Mandela from active involvement in the ANC for the next two years and he fell back on his day job. Somehow, while dedicating countless hours to the Youth League, Mandela managed to earn his law degree. In August 1952, together with Oliver Tambo, Mandela rented a cramped space in downtown Johannesburg and opened the law offices of Mandela & Tambo, the first and only black law partnership in South Africa. The pair swapped fighting the cruelties and absurdities of apartheid from the streets to the courts.

The stairs leading to their office were packed day and night with poor Africans desperate for an advocate against unjust laws. As Mandela recounts in his autobiography, *Long Walk to Freedom*: "...it was a crime to walk through a Whites Only door, a crime to ride a Whites Only bus, a crime to use a Whites Only drinking fountain, a crime to walk on a Whites Only beach, a crime to be on the streets past eleven, a crime not to have a pass book and a crime to have the wrong signature in that book, a crime to be unemployed and a crime to be employed in the wrong place, a crime to live in certain places and a crime to have no place to live."

Mandela proved a capable and charismatic courthouse lawyer, while Tambo - the more reserved and studious of the two - handled the legal research. With his tailored suits, imposing physical stature and handsome grin, Mandela the crusading lawyer earned a celebrity following in black Johannesburg and an army of enemies in the white establishment. He was routinely followed by plainclothes government security officers and barred from leaving Johannesburg for important cases. Despite Mandela and Tambo's pioneering legal work, the police state was hugely effective at smothering organised opposition. Isolated from other banned ANC leaders, Mandela feared an all-out ban on its existence. The ANC, he decided, needed to have a plan to go underground. In 1953, Mandela crafted the so-called 'M-Plan' that called for an underground network of secret ANC cells across South Africa. While the M-Plan was never implemented, it set the groundwork for the not-too-distant day when Mandela and his freedom fighters would be driven into the shadows.

When Malan's National Party strengthened its position in parliament in the 1953 general election it became clear that the United Party were failing to propose a viable alternative to apartheid. The ANC called for all enemies of apartheid, regardless of race or creed or political ideology, to convene in a massive Congress of the People. The mission of this Congress was to produce a Freedom Charter, a 'constitution' that called for racial equality and liberty in South Africa. The Congress met in 1955 with Mandela in secret attendance.

As the Freedom Charter was read in three languages, approving cries of "Afrika!" reverberated

Mandela's Prisons

1. Robben Island 1962-1982

For 18 excruciating years, Mandela slept on a thin straw mat on the concrete floor of a bare cell measuring 2.1 by 2.4 meters (7 by 8 feet). After the Rivonia trial, where Mandela and nine ANC compatriots were found guilty of sabotage, the men were flown to Robben Island, a remote prison for political enemies and common criminals since the mid-16th century. For the first year, Mandela was woken at 5:30am, given a bucket of cold water to wash, fed a breakfast of corn mush and led into the courtyard, where he would spend all day — with breaks for two more bowls of mush and grisly meat — hammering stone into gravel. Conversation was forbidden, but Mandela was allowed to read law texts at night before retiring under the perpetual blaze of a naked 40-watt bulb. In 1965, Mandela began labouring in the lime quarry in the relentless heat of summer and the bone-chilling cold of winter. The burning glare from the quarry walls damaged his eyesight.







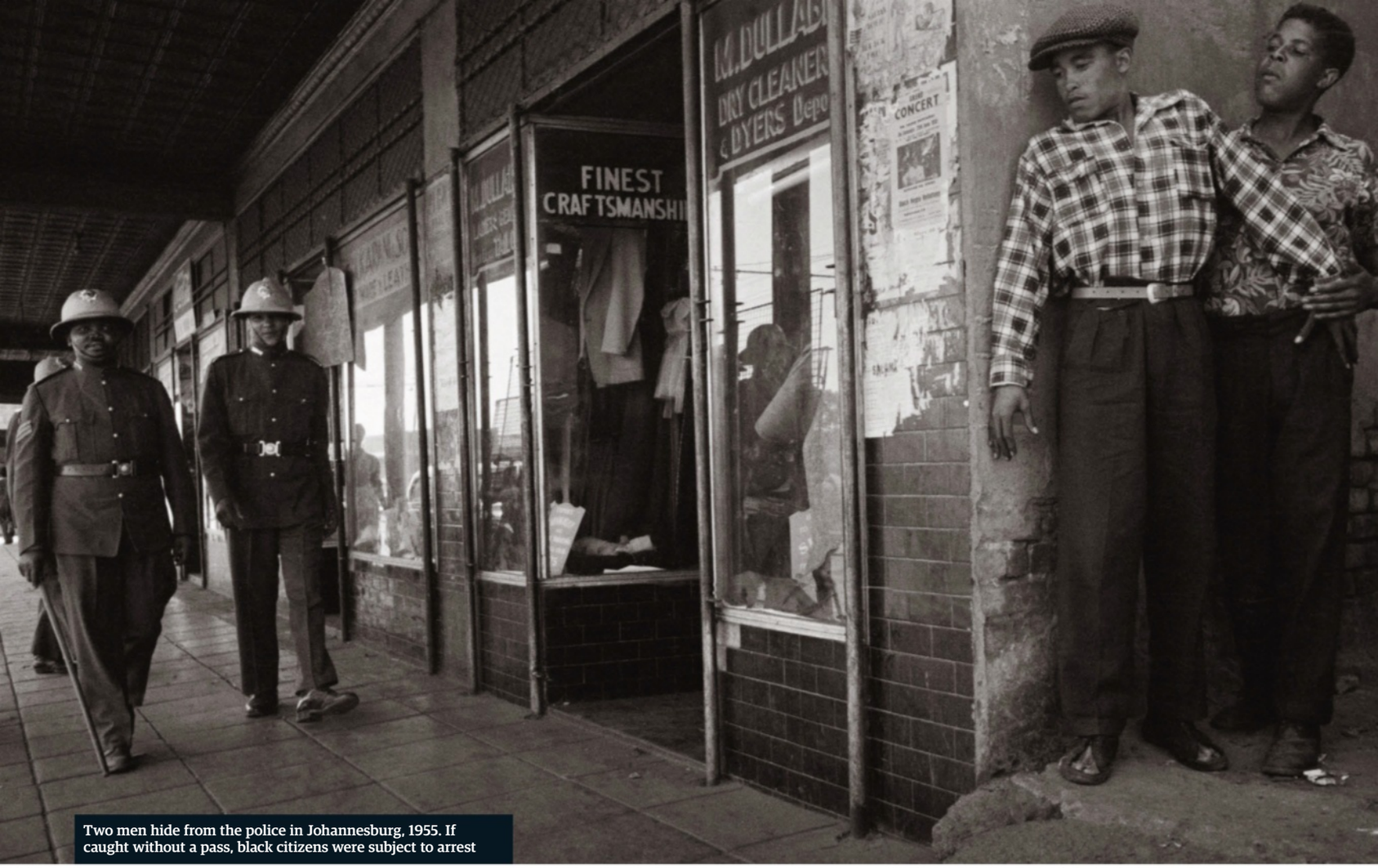
2. Pollsmoor Prison 1982-1988

Despite the backbreaking labour and wretched conditions on Robben Island, Mandela was initially disappointed to be transferred to the modern mainland fortress of Pollsmoor Prison. During his 18 years on the island, Mandela had formed deep friendships with fellow prisoners and guards and missed the fresh air and camaraderie denied by the steel doors and closed quarters of Pollsmoor. But there were major improvements, too. Mandela was transferred to Pollsmoor with three close friends, including Walter Sisulu, and the four lived in a shared cell with a separate reading room and even a television. Eventually, the men were allowed to spend a portion of each day on a rooftop, where Mandela convinced the warden to give him steel drums and soil to plant a vegetable garden.

3. Victor Verster Prison 1988-1990

Arriving at Pollsmoor, Mandela complained about the prison's damp conditions. By 1988 he was regularly suffering coughing fits and unexplained vomiting. Transferred to a whites-only hospital and housed on his own floor, Mandela underwent an emergency operation to remove dark fluid from his lungs, an early sign of tuberculosis. Fearing that Mandela would become a worldwide martyr for the anti-apartheid cause if he was to die in prison and the news coverage it would cause, the authorities allowed him to recuperate in an expensive private hospital. Then, instead of shipping him back to Pollsmoor, the regime transferred Mandela to the low-security Victor Verster Prison outside Cape Town. The conditions were vastly different to those he had experienced since 1962. Mandela wasn't confined to a cell, but given one of the guard's private cottages which afforded him much more space than he was used to. Still, even though it had all the trappings of home, nothing could hide the fact that his cottage was still a prison. Gratefully, it would be his last.





Two men hide from the police in Johannesburg, 1955. If caught without a pass, black citizens were subject to arrest

"The government tried to paint the accused as communist plotters aiming to topple the regime through violent uprising"

from the 3,000 delegates in attendance. However, on the second day of meetings, armed Afrikaner detectives raided the meeting hall and seized the microphone, telling all in attendance that they were part of an investigation into acts of treason. Most in the ANC dismissed this as a publicity stunt and few took the investigation seriously. However, early on a December morning in 1956 Mandela awoke to the banging of fists on his door and was met with three white policemen with a warrant for his arrest on charges of high treason. It wasn't an isolated event. Over 155 ANC leaders and Congress attendees of all races were rounded up, arrested, and held for two weeks before the infamous Treason Trial began.

Using more than 12,000 documents collected during a three-year investigation, including snippets of public speeches and the text of the Freedom Charter itself, the government tried to paint the accused as communist plotters aiming to topple the regime through violent uprising. The trial was rife with incompetent testimony and flimsy evidence, ultimately failing to convict Mandela and his co-defendants, but the criminal proceedings stretched on for an interminable five years and the ANC directed much of its efforts to raising money for their defence.

Early in the Treason Trial, Mandela returned home from the courtroom to find that his personal life was also in turmoil as Evelyn, his wife and mother of his two young children, had left. Soon after the divorce, Mandela fell in love with a charming 22-year-old social worker named Winnie Nomzamo Madikizela. Sixteen years younger than Mandela, Winnie was exceptionally bright – the first black social worker hired at Baragwanath Hospital – and fascinated by fashion, not politics. She was smitten by Mandela the handsome lawyer, not Mandela the political firebrand. Winnie, who also grew up in the Transkei, was in awe of Mandela's chiefly carriage. Despite objections from Winnie's family the two married in 1958 during a break in the Treason Trial. Unlike Evelyn, Winnie would eventually be drawn deeply to politics and earn her own fame and controversy.

In 1958, Hendrik Verwoerd, minister of native affairs under Malan and proud architect of apartheid, took over as prime minister and parliament passed the Promotion of Bantu Self-Government Act in 1959, which aimed to drive blacks entirely out of white South Africa. As this move to further segregate the country played out, the Treason Trial involving Mandela and other ANC leaders droned on and ideological rifts in the ANC - never far from the surface - broke out between those who saw black statehood as the ultimate goal and those who believed in a free and equal South Africa for all. This eventually led to leading Africanist Robert Sobukwe splitting from the ANC to form the Pan Africanist Congress (PAC) in 1959. The rivalry between the two opposition groups would lead to the hasty organisation of a PAC-sponsored protest march in Sharpeville, a Johannesburg suburb, in 1960, which ended in the police massacre of unarmed black protestors.

The Sharpeville Massacre brought the simmering conflict between the NP regime and the black opposition to a boiling point. Expecting an outpouring of anger against the killings, Verwoerd took the offensive, issuing a State of Emergency and detaining 18,000 people deemed enemies of the state. In the process, both the ANC and PAC were banned outright. If there was ever a time to implement Mandela's M-Plan and go underground, this was it, but with 2,000 ANC leaders among the detained, there was too much confusion.

The Treason Trial finally ended in March 1961 with all charges dropped against Mandela and the 29 others accused. Faced with the constant threat of bans, arrests and more trumped-up charges, Mandela decided that he would be most effective to the cause by going underground. After a tearful goodbye with Winnie, he left his home and family and entered one of the darkest and most transformative phases of his life. Moving from safehouse to safehouse, Mandela put all of his efforts into organising a peaceful, three-day stay-at-home strike and arranged secret meetings with the South African press, who began to recognise him as the unofficial mouthpiece of the underground revolution. When the day of the strike arrived,



Nelson Mandela emerges from the court after his acquittal in the Treason Trial

"For Mandela, the struggle for a free South Africa was no longer political: it was a matter of life and death"

however, the regime responded with an impressive military show of force. Crushed, Mandela cancelled the strike after a single day.

Soon after this the despondent 43-year-old was interviewed by a journalist and warned: "If the government is to crush by force our non-violent demonstrations, we will have to seriously reconsider our tactics. In my mind, we are closing a chapter on this question of non-violent policy."

For Mandela, the struggle for a free South Africa was no longer political; it was a matter of life and death. If the regime was going to respond to strikes and protests with bayonets and machine guns, the opposition had a simple choice: take arms or die. Non-violence alone had reached its limits. White South Africa would need to be blasted out of its complacency. With a warrant out for his arrest, Mandela was branded as an outlaw, a label he wore with pride. From his safehouse he embraced his newfound militancy with a lawyer's zeal. He read every book he could find on armed revolution and guerrilla warfare but despite his change in attitude the practicalities were different; Mandela had never held a gun, let alone fired one.

Mandela's new militancy reflected other parts of the nation. By 1961, the PAC already had its own militant squad, as did the communists. Mandela was adamant that the time was ripe to organize a militant wing of the ANC. Publicly, the ANC would admit no ties to the guerilla organisation, but the armed rebels would act in accordance with ANC leadership to achieve strategic political goals. Mandela the amateur military commander was now in charge of the ANC's fledgling sabotage squad, Umkhonto we Sizwe or 'Spear of the Nation,' best known by the initials MK.

Mandela recruited Walter Sisulu and their white communist friend Joe Slovo as joint commanders of MK. The communists were crucial to the MK's success, since many of them had fought in WWII and had experience with guns and explosives. Wolfie Kodesh, another white communist ally, remembers accompanying Mandela on their first bomb test. Deep inside a Johannesburg brickworks, the men gingerly detonated a homemade canister bomb built by an experienced 'desert rat' named Jack Hodgson. After a misfire, the force of the explosion produced a mushroom cloud of dust. Convinced they would be caught by police, Mandela and Kodesh sped away in their '48 Chevy, giggling like schoolboys.

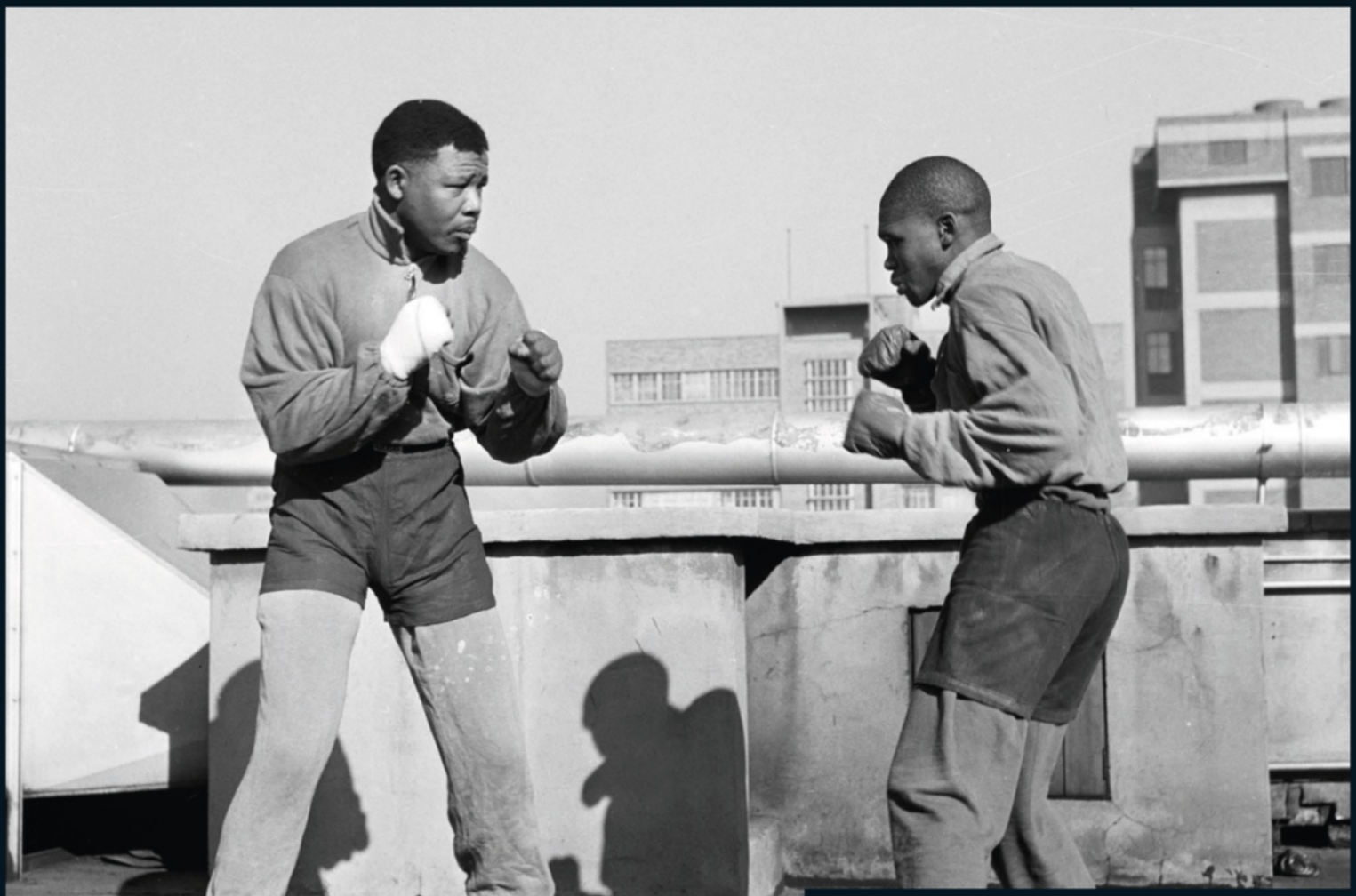
The first act of sabotage personally planned by commanders Mandela, Slovo and Sisulu occurred on 16 December 1961. The ragtag group of MK foot soldiers still knew very little about military tactics, but were anxious to make their presence felt. They vowed not to kill anybody, if possible, but to target the most visible institutions of apartheid. In three separate bombing attacks, MK targeted government offices across the country. The only casualty was one of the saboteurs, and the attacks did little to strike fear in the white populace, but Mandela thought it was a tremendous success.

The regime condemned the MK as communist terrorists and Mandela the activist lawyer was now effectively an underground rebel commander. With a price on his head, he went deeper into hiding, favouring a remote farm called Lilliesleaf in the Johannesburg suburb of Rivonia. When he travelled to meet ANC leaders and Winnie, he did so in disguise, sometimes as a chauffeur, a night watchman or a mechanic. The swooning press dubbed him the 'Black Pimpernel.'

With the blessing of the banned ANC leadership, Mandela slipped out of South Africa in late 1961 to garner support for the armed struggle. He received a hero's welcome at the Pan-African Freedom Conference in Ethiopia. In London, Tambo begged Mandela to stay there or travel to America, but he was insistent that he wanted to face his enemy head on. Mandela was as good as his word and returned to Africa to attend an intensive six-month military training camp in Ethiopia where he handled a pistol and automatic rifle for the first time and learned to make explosives.

While Mandela was away, back in South Africa, the PAC military wing had begun to assassinate whites out of retaliation for government crackdowns, something Mandela and the MK had vowed never to do. In response, the parliament passed the Sabotage Act in 1962, making any act of political sabotage, no matter how petty, a capital crime. Mandela knew that a return to South Africa meant almost certain arrest or even death, but he made little effort to disguise his identity when he crossed the border, wearing only military khakis and a patchy beard of a Sixties revolutionary.

As he must have known would happen, on 5 August 1962, Mandela's transport from Durban to Johannesburg was overtaken by police and he was arrested and charged with incitement to strike and leaving the country without a passport. In one of the most memorable and theatrical moments of his public life, he appeared in the Pretoria courthouse bare-chested wearing his native Xhosa garb, a



Mandela boxing on a Johannesburg rooftop during a break at the Treason Trial in 1957



Jubilant scenes at Mandela's first ANC rally after his release



Mandela with Congolese politician Emmanuel Dungia in 1997

Road to freedom: Why Mandela was freed



FreedomFest 11 June 1988

In 1988 more than a billion people worldwide tuned in to watch a star-studded 11-hour concert celebrating Mandela's seventieth birthday. Live acts included some of the biggest pop stars of the day and several prominent African musicians. Promoter Tony Hollingsworth and the British Anti-Apartheid Movement spearheaded the organisation of the event at London's Wembley Stadium, which proved a logistical and political nightmare. At first, musicians refused to commit unless the bill was stuffed with A-list acts. Once the acts were booked, Hollingsworth had to negotiate between ANC leaders demanding a politically-charged event and Western broadcasters who wanted to strip the concert of any overtly anti-apartheid messaging. In the end, the concert was promoted as a pro-freedom rally celebrating Mandela's birthday, but political speeches were banned. With violent clashes on the news, the viewers clearly understood the political significance of the concert. The event helped bring the anti-apartheid movement into the world's living rooms.

Internal resistance to apartheid Seventies and Eighties

For South Africans, Mandela's imprisonment was symbolic of the larger oppression and subjugation of blacks under apartheid. As Mandela rose to prominence as a prisoner of conscience, his name and image were invoked by organisations intent on toppling the racist regime. Student groups like the South African Students' Movement were some of the first to stage mass protests and strikes like the Soweto Uprising of 1976, in which police shot 23 students dead in a mass revolt against the decree that black students learn Afrikaans in school. Labour unions were another force of internal resistance, particularly after black trade unions were legalised in 1979. Unions could effectively fill the vacuum left by banned political organisations and since unions met inside factory walls, they were immune to public meeting laws. Churches and religious coalitions were another powerful anti-apartheid force. Anglican bishop Desmond Tutu led the outcry as secretary-general of the South African Council of Churches, helping to earn him the Nobel Peace Prize in 1984 for his international call to conscience. Some white South Africans also rallied against apartheid. In parliamentary elections during the Seventies and Eighties, 15 to 20 per cent of whites voted for the Progressive Party, the only South African political party opposing apartheid.

While Mandela was imprisoned

Assassination of Verwoerd
Prime minister Hendrik Verwoerd, the architect of apartheid, is assassinated in the House of Assembly by an enraged parliamentary messenger. His National Party successors would gradually soften the regime's vice-like grip on power.
6 September 1966



Release Mandela campaign
ANC president Oliver Tambo, still in exile, launches an international campaign to free Mandela. The *Sunday Post* of Johannesburg circulates a public petition for his release, which is signed by dozens of South African opposition groups.
9 March 1980



Kennedy visit
U.S. senator Edward Kennedy, brother of JFK and RFK, visits South Africa and meets with anti-apartheid leaders like Winnie Mandela and Desmond Tutu, the Nobel Peace Prize recipient in 1984.
January 1985



1966 | 1970 | 1975 | 1980 | 1981 | 1982 | 1983 | 1984 | 1985



Soweto Uprising
20,000 students take to the streets to protest the obligatory use of Afrikaans in classroom instruction alongside English. Heavily armed riot police kill hundreds, mostly teenagers. In the aftermath, the ANC rises to power as a student-organising group.
16 June 1976



Release of first political prisoner
Breyten Breytenbach, a white anti-apartheid activist convicted of treason, is released early from his life sentence after a massive international campaign. The Botha government starts to quietly reassess its strict policy on political prisoners.
2 December 1982

Coetsee meets Mandela
Minister of justice Kobie Coetsee appears at Mandela's hospital bed while the imprisoned leader recovers from prostate surgery. Together, they begin to forge a compromise by which the ANC would retreat from violence in exchange for relaxing apartheid laws.
15 August 1985

Economic sanctions 1986

The United Nations were an early and vocal opponent of apartheid and in 1963 called on all member states to stop shipments of arms, ammunition and military vehicles. However, calls for further economic sanctions met resistance, particularly from the US and UK, which held longstanding political and economic ties with the ruling regime. British prime minister Margaret Thatcher labelled the ANC and its supporters "terrorists." The Eighties saw increased TV news coverage of apartheid resistance, and many US corporations, colleges and universities pulled investments. The most devastating economic blow came when the US Congress passed the Comprehensive Anti-Apartheid Act in 1986. President Ronald Reagan claimed they hurt the very people the US was trying to help and vetoed the bill, but the Congress voted to override his decision. The South African economy lost hundreds of millions of pounds each year in global investment until sanctions were repealed in 1991.



F W de Klerk 2 February 1990

In his first address to parliament after assuming the presidency de Klerk shocked his supporters and critics by unbanning the ANC and other opposition groups and announcing the imminent release of Mandela from prison. De Klerk was an unlikely ally for the ANC. Born to National Party royalty he rose to prominence as an old-school Afrikaner politician but ultimately came to see apartheid as an unsustainable solution. De Klerk initially supported the Bantustan campaigns to relocate blacks to 'native' homelands, but admitted that whites made a mistake by retaining too much land. As sanctions mounted and shifting global politics threatened to further isolate the country economically, he decided that the only way to save his country was to transition to an open democratic society. In negotiations with Mandela, before and after his release, de Klerk fought hard against the socialist-communist factions within the ANC and won support for a free-market economic policy. In 1993 he shared the Nobel Peace Prize with Mandela for his role in ending apartheid.



A crowd of demonstrators calling for the release of Nelson Mandela from prison

"Mandela was as good as his word and returned to Africa to attend an intensive six-month military training camp"

US sanctions
After a delegation of 13 US congressmen is denied permission to visit Mandela, the Senate passes a comprehensive sanctions bill aimed at crippling the South African economy. President Reagan tries to veto it, but is overruled.
July 1986



Mandela's mentor freed
The new president of South Africa, de Klerk, releases Mandela's political mentor, Walter Sisulu, and seven other prominent Robben Island prisoners a month after succeeding Botha. Their release is a clear sign that the South African government realises the current situation in their country is untenable and that the ANC has to be allowed to reenter the political system.
October 1989

1986 | 1987 | 1988 | 1989 | 1990

Mandela has tea with Botha
The world's most famous prisoner is snuck through the back door of the president's residence for tea and conversation. Botha serves Mandela, a remarkable gesture in apartheid South Africa, and the path to peace is begun.
5 July 1989



De Klerk lifts ban on the ANC
After months of secret negotiations with Mandela, president de Klerk addresses parliament and calls for the immediate lifting of the ban on the ANC, an end to the state of emergency and the release of Nelson Mandela.
2 February 1990



Mandela released from prison
11 February 1990

By 4pm, thousands of ecstatic supporters packed the small plaza outside of Victor Verster prison where Mandela had been kept since 1988. The crowd were there to catch a glimpse of their 'king,' but few even knew what he looked like anymore. The 71-year-old Mandela hadn't had a photo taken in 27 years and this unknown quality has added to his legend. Then, a tall, stately figure with salt-and-pepper hair, wearing a prim grey suit, stepped through the prison gates and into the blazing South African summer sun.
At first, Mandela looked overwhelmed; after nearly three decades in solitude, he was thrust into the spotlight, watched by millions the world over. Then with one hand clasped in Winnie's, Mandela raised a fist into the air in a defiant and proud ANC salute. The crowd roared, Mandela smiled, and the prisoner took his first steps on a journey to becoming South Africa's first black president.



leopard-skin kaross draped over one shoulder.

Mandela freely admitted to his crimes, but used the platform to deliver an hour-long speech justifying his actions in the name of revolutionary democracy. He was found guilty and sentenced to five years of imprisonment, at the time the harshest sentence handed down for a political offence in South Africa. After six months in Pretoria prison, Mandela was transferred to Robben Island. While serving his sentence of hard labour there, police investigators hunted down his MK co-conspirators at the farm hideout in Rivonia. The careless revolutionaries, Mandela included, had left a treasure trove of documents implicating themselves in the planning and execution of acts of sabotage and guerilla warfare against the regime.

Mandela was transferred from the Robben Island prison back to the same Pretoria courtroom in October 1963 to face capital charges related to 221 acts of sabotage. He was joined in the Rivonia Trial by Sisulu and nine other MK members. The evidence against the saboteurs was overwhelming, but the most damning testimony came from Bruno Mtolo, a former saboteur who struck a plea deal with the prosecution and recounted detailed conversations with Mandela and his co-conspirators in the MK.

In lieu of a defence strategy, Mandela delivered one of the most famous speeches of his life. Mandela's 'Speech from the Dock' lasted four unbroken hours, detailing his beatific life in the Transkei, the blind nationalism of his early activism, his evolution to all-inclusive opposition, and his ultimate abandonment of the principles of non-violence in the face of brutal oppression.

Mandela famously concluded his speech with the following words: "During my lifetime I have dedicated myself to this struggle of the African people. I have fought against white domination, and I have fought against black domination. I have cherished the ideal of a democratic and free society in which all persons live together in harmony and with equal opportunities. It is an ideal, which I hope to live for and to achieve. But if needs be, it is an ideal for which I am prepared to die." Mandela did not ultimately die for that ideal, but he would lose the next 27 years of his life to imprisonment because of it before he could take his first faltering steps as a free man. His steps may have been shaky, but he was walking out to a South Africa that was on the cusp of a seismic change, and a change that would see him at its very heart.

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Shakespeare explaining his new play to an expectant audience at the Globe theatre

Shakespeare's love and lust

He imagined the greatest romances the world hass ever known, defied convention by addressing love sonnets to a man and wrote some of the raciest verses of his day – but who did William Shakespeare really love?

Written by Gavin Thomas



Shakespeare's mark on the English language is indelible, not only due to the lasting influence of his works but from the 1,700 words he invented and set on paper for the first time. With his words he captured the greatest romances the world has ever seen. Like his contemporaries Thomas Kyd, Christopher Marlowe and his good friend Ben Jonson, Shakespeare made a name for himself in London by writing plays to entertain people, to honour and challenge the conventions of theatre and to pay the bills. However, the enduring image of Shakespeare is that of the great romantic who penned some of the world's most enduring love affairs.

His works span at least 37 plays, 154 sonnets and five poems, including the great love and tragedy of Romeo and Juliet, the intricate courting of Orlando and Rosalind, the sore trials faced by Claudio and Hero and more still. In a time when history, tragedy, pastoral and morality plays were the usual fare, Shakespeare crafted new kinds of characters, with greater depth and complexity as time passed, helped by the growing calibre of the actors he worked with in his company, the King's Men. However, the breadth of emotion in his work, from the purest to the basest, didn't all come from the actors' skills. He wrote of romances, love and lust, with such clarity of perception and imagination that it's tempting to think of personal experience behind the famous lines. How else could he have known so much about unrequited, indiscriminate, indiscreet, scandalous or clear, true love?

We know precious little of the man who wrote the works, but it is believed that he was born on 22 or 23 April 1564 in Stratford-upon-Avon, and that he died in 1616, supposedly on his birthday. As a young man, he became an actor and started collaborating with playwrights on new productions, later starting to write and direct his own. He was known for performing in his own plays, like the Ghost in *King Lear*, as well as those of his peers, but playwriting was his bread and butter.

Shakespeare steadily earned the money to buy property in London and a large house, as well as land, in Stratford. Meanwhile, his celebrity was cemented with plays like *Macbeth*, *King Lear*, *As You Like It*, *Much Ado About Nothing* and *Romeo and Juliet*, while Shakespeare's racy sonnets (or 'sugared' sonnets, as they were known among his inner circle) emerged without his consent, the scoop of the century for the publisher who sold them. Living life with an enviable energy, he appears to have been based in London, far away from the woman he married before he left Stratford, for at least the majority of his time in the spotlight.

Shakespeare's wife was from Shottery, a small village just a mile outside Stratford-upon-Avon. She's widely thought to be Anne Hathaway, mostly due to the will of one Thomas Whittington, who used to be a shepherd for Hathaway's family at Hewlands Farm, the cottage where her whole family lived together. Whittington left 40 shillings to 'the people', to be paid by Anne Shakespeare, which is thought

"Shakespeare wrote of romances, love and lust with such clarity of perception and imagination"

to be linked to the debt owed to him by an Agnes Hathaway, who had borrowed money off him many years before. Back then, Agnes would have been pronounced with a silent 'g', so it's a safe bet that they're different spellings of the same first name. After all, Shakespeare was recorded as Shakspere, Shagspeare and Shaxper, and even spelt differently by the man himself.

Hathaway was pregnant when they married. Shakespeare was 18 and she was eight years older, a margin that has raised eyebrows among scholars for centuries, and their daughter Susanna was born six months after. Since Susanna was christened on 26 May 1583, this puts their marriage somewhere around November 1582. The wedding itself is thought to have been rushed through on account of Anne's condition – she would have been three months pregnant at this stage and starting to show soon – as well as the impending Advent Sunday, 2 December 1582. Between then and the octave of the Epiphany, on 15 January 1583, marriage was prohibited, so the expecting couple may have felt a pressure to conceal the fact that their love life predated their lawful union. The real truth of it all is a matter of conjecture, and has been debated in countless articles about Shakespeare the globe over, but the social pressure on English Renaissance couples to marry should not be underestimated.

"Theatres seemed to create a certain sexual atmosphere and ambiguity, where the normal rules are somehow inverted"

Two years later, the couple had twins, Hamnet and Judith, but that is all we know about the Bard until much later. He disappears from the records at that point – embarks upon his 'lost years' – and then emerges around five years later in London, in a scathing snarl from rival poet and playwright Robert Greene. Greene alludes to *Henry VI, Part 3* by saying Shakespeare has a 'tiger's heart wrapped in a player's hide' and calls him an 'upstart crow', so we also know that he'd made some waves in London, as Greene wouldn't have taken the time to mock him if he was insignificant. We can't say anything for sure about Shakespeare and Hathaway's relationship, other than the fact that they were apart for most of it as there is no evidence of Hathaway ever living in London. Her husband travelled home often, increasingly in later years as he spent his money there and planned his retirement, so Shakespeare must have spent months at a time away from what we assume is the woman he loved.

Where did his inspiration come from, then? He wrote about more than just love at arm's length, and was evidently a man who understood the heart. Was he observing or partaking in London life? We know that he lived in Southwark for a time, from around 1599, at the end of London Bridge, that held the heads of traitors to the crown – among which were those of his distant relatives, John Somerville and Edward Arden, who both failed in a plot to kill the queen. Shakespeare was a lodger with the Mountjoy family on Silver Street, near the Bear Garden where both bears and bulls were baited for sport. The area itself, 'Liberty of the Clink', was carnivalesque at times, with around 300 inns and bawdy houses, or brothels, pressing in on the booming playhouses, bringing play-goers and prostitutes from miles around. Places like 'Love Lane' were notorious hiding places for Londoners looking for a quiet nook. Love

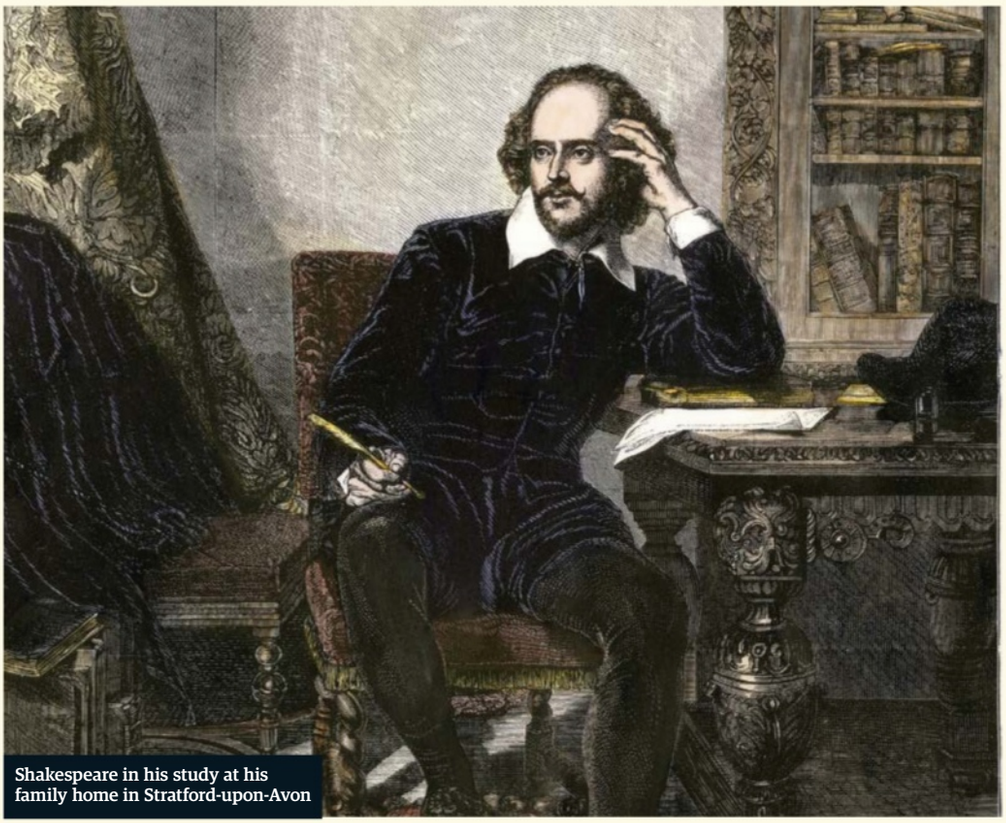
Love and lust in the Bard's plays



Romeo and Juliet, the star-crossed and ultimately tragic lovers

Shakespeare presents true love as a force of nature – something indomitable that sweeps over his characters and changes them. When we first meet Romeo, for example, his understanding of love is limited to infatuation, while Juliet is engaged to another man, Paris. Their meeting upends their respective worlds, as it does in the great romances throughout Shakespeare's plays – it is Phoebe in *As You Like It* who quotes Christopher Marlowe's poem by asking 'whoever loved that loved not at first sight?', and this sentiment echoes throughout the works. Later, the arranged marriage of Juliet and Paris falls apart as the love of Romeo and Juliet blooms. This was scandalous stuff back then, in days when arranged marriages were the norm and young heirs tended to have little say in their own conjugal futures. For Shakespeare, love was a transcendent force that outranked marriage, which sometimes used it as a vehicle but disregarded it when it becomes an obstacle.

This is another reason why Shakespeare plays fast and loose with marriage in his plays – it is a social force, not a real, human one like love. And love is unpredictable, too – Titania, queen of the fairies in *A Midsummer Night's Dream*, ends up falling in love with Bottom, a weaver who is sporting the head of an ass at the time, while all the play's other lovers get mixed up with each other before marrying their proper partners. In the play's opening scene, Shakespeare writes: "Love looks not with the eyes, but with the mind, and therefore is winged Cupid painted blind." He's making the point that true love can strike anywhere, at any time, and that no matter how inconvenient it may be in terms of existing marriages or commitments, or in the object of affection (even if it's an ass), it cannot be denied. As he elaborates in the next scene: "The course of true love never did run smooth." While we'll never know if Shakespeare really fell in love with someone other than Anne Hathaway (if indeed he did love her), or whether he had affairs, he certainly understood the workings of the heart. His plays showcase a writer who believed love was the most powerful force in the world, one that refused to be rationalised.



Shakespeare in his study at his family home in Stratford-upon-Avon

and lust were on the stage, too, and with cross-dressing further compounded by plays such as *As You Like It* – its boy actor (no women allowed on the stage) playing Rosalind who then plays a man – the theatres seemed to create, or at least propagate, a certain sexual atmosphere and ambiguity, where the normal rules are somehow inverted. Shakespeare was certainly surrounded by temptations while he was away from Hathaway, and despite not knowing whether or not he ever had an affair, we know he responded to these encounters by depicting them.

Outside of the theatre and its exotic airs, things are far less amorous. Sex outside of marriage was very much frowned upon among both Catholics and Protestants. In 1584, men were taken to the Consistory Court of Stratford for not living with their wives or for cohabiting with one woman while being married to another. One man had to make a public confession for having 'two bastard children unlawfully begotten', wearing a white sheet as he did so. The Puritans were a strong voice at the time, too, and they renounced all sensual pleasures while reviling the theatre. They blamed the 1580 earthquake on theatres, and saw them as an unhealthy source of excitement and sodomy of all sorts. Homosexuality wasn't understood in the way that we see it now, and between Henry VIII and Elizabeth I the law prohibiting sodomy, or 'buggery', was continually passed and repealed. As an example, the authorities in Venice were so worried about it that they encouraged the city's prostitutes to bare their breasts at passing men, to woo them back, giving name to the Ponte de le Tette.

Compared to some of his fellow playwrights, though, Shakespeare's language is pretty clean, and given his output during his time on Silver Street we can probably assume that he wasn't spending all of his time flirting. He was reportedly 'not a company keeper' and 'wouldn't be debauched' because he was focussed on his work. In his chambers, he'd write quietly in the evenings while the city's sounds and dramas filled the air. Shakespeare was involved with the city life, too, having given evidence at the Court of Requests in Westminster in a legal case involving the Mountjoy family, and as his wealth increased he started to become quite respectable, even purchasing a coat of arms for himself and assuming the title 'gentleman'. However much of a maverick we may want him to be, in our desire to see a man who lived every great romance he wrote, we'll never know for sure if Shakespeare had any illicit lovers or mistresses, though his sonnets do suggest otherwise.

It is possible to guess at his method and source of inspiration by looking at the way he worked. One constant stream of criticism that's been levelled at Shakespeare is that he was a plagiarist. He produced some of the finest and most memorable works of literature, but upon closer reading the origins of his ideas become clearer. The poem *Venus and Adonis,* for example, was based on Ovid's *Metamorphoses*, and its sequel, *The Rape of Lucrece,* came from Ovid's *Fastis*. In fact, the influence of *Metamorphoses* can be seen throughout Shakespeare's life. It provided the relationship between Pyramis and Thisbe of *A Midsummer Night's Dream*, it's referred to directly in *Titus Andronicus and Cymbeline*, and it's constantly alluded to until *The Tempest*, at the end of his career. Shakespeare also borrowed plots, settings and characters from books like Plutarch's *Lives*, Raphael

Love's inspiration?

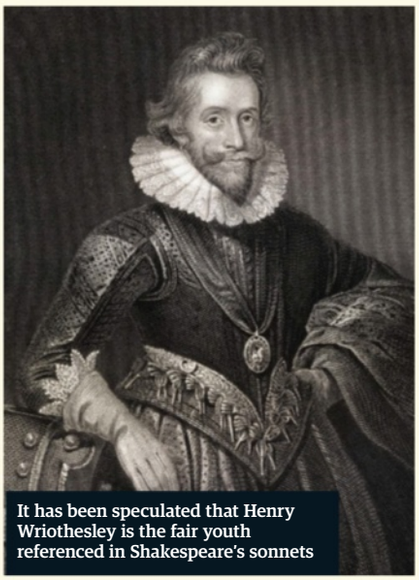
Little is known about Shakespeare's wife, whom evidence suggests was Anne Hathaway. Anne grew up in a twelve-room cottage in a cluster of farms, surrounded by sheep pastures and arable land given over to crops, on the edge of Arden Forest. Was this the inspiration for the great forests of Shakespeare's plays, and his idyllic portrayals of pastoral life? In the early days of their marriage, before he entered his 'lost years' and later turned up in London, Shakespeare would have been courting Hathaway here, and then raising their children.

Hathaway has not, however, fit comfortably into the role of Shakespeare's muse. Some historians have described her as a mature woman, who at 26 seduced a much younger man of 18. Some have wondered why their marriage in 1582 had been secured, with a bond of £40, posted by two husbandsmen, to guarantee that no legal impediments existed that might prevent their getting married, the day after a marriage license had already been applied for by an Anne Whateley and William Shakespeare. Was Whateley Shakespeare's lost love, forced out by a conniving Hathaway? Or had the clerk simply confused the names, since he'd already made a record for a Whateley that day and was known to make mistakes? Nothing is certain, except for Shakespeare's will.

In shaky handwriting – possibly belonging to the Bard, or that of someone writing on his behalf, given his poorly condition – Shakespeare bequeaths his 'second best bed' to Hathaway, in a note that is widely considered to be a little short and lacking in emotion. In the rest of his will he divides the fruits of his life, the respectable estate he has built up since striking out from Stratford-upon-Avon after his twins were born. The bed is a mystery; it could have been a thoughtful gesture, the best bed usually being kept for guests while the couple took the second best, or it could have been a cold shoulder.



The childhood home of Anne Hathaway



It has been speculated that Henry Wriothesley is the fair youth referenced in Shakespeare's sonnets

Love and lust in the Bard's sonnets

While Shakespeare's plays tackled every inch of human experience, his sonnets are very clear in their concerns. He writes of love and longing, passion, desire and sex, connections carnal and ethereal – he explores attraction and inverts all the contemporary stereotypes he possibly can along the way.

Of his 154 sonnets, the first 126 are about a 'fair youth', while the rest address a 'dark lady'. When she appears, Shakespeare makes it clear that the dark lady cheats on him with the fair youth. She is a compelling yet fiery figure. The sonnets speak of a cunning woman with 'a thousand errors' and a 'false-speaking tongue', but Shakespeare is still trying to win her heart. She's no conventional beauty, either, with eyes 'nothing like the sun', 'black wires' for hair and breath that 'reeks'. Back then, sonnets addressed an idealised muse – a woman of perfect body and pure mind, like an Ancient Greek goddess – and had done since the philosopher Aristotle was writing them. Yet the dark lady 'treads on the ground', and Shakespeare loves her all the more for stepping off the pedestal.

The fair youth, however, is the subject of a very different love. In the first 17 sonnets, Shakespeare urges the fair youth to marry, only to then fall in love with him. Later sonnets imply that Shakespeare saw male relationships as platonic, possibly of a higher nature than others because of their separation from sex, and one in particular says that the fair youth had been first created a woman, and then 'prick'd out for women's pleasure'. Shakespeare drew a distinction between the love that they shared and the 'love's use' that belongs to women.

It is sometimes thought that the fair youth could be Henry Wriothesley, the third Earl of Southampton, who was known for his effeminacy and also being Shakespeare's first aristocratic patron. But the 'Shakespeare' of these poems may be different to the real Shakespeare holding the pen. Perhaps the initial sonnets were commissioned by a father anxious about his unborn heirs, and Shakespeare subsequently fell in love, or maybe they were as fictional as the romances in his plays and many of the love songs of our modern-day world.

> "Puritans renounced all sensual pleasures while reviling the theatre. They blamed the 1580 earthquake on theatre"

Holinshed's *Chronicles*, Boccaccio's *Decameron*, a book of exorcisms, his fellow playwrights and more besides, if we rely on the findings of wordsmiths who have run lexical analyses to determine where Shakespeare got his ideas from. But plagiarism was a very different thing to today's world of copyright law and staggering lawsuits; writers repeatedly rewrote each other and it wasn't uncommon to 'improve' on another's work. So perhaps we have a voracious reader who filled his mind with the raw materials for a world's worth of love stories written by others, rather than from personal experience.

Returning to Shakespeare's room on Silver Street, miles away from his wife and children, we see a man who, at his desk, reworks old tales into innovative dramas and it's not inconceivable that he reworked the real-life dramas he was involved in. It has been thought by a few that Shakespeare must have been an alchemist because of his detailed knowledge of herbal lore. However, we know that in his time he lived near grocers and apothecaries and markets filled with the scents and sights of fresh herbs. Could this explain how he came to possess such a firm grasp of the field; taking note of all the details of his surroundings? In much the same way did he write about the love he saw around him rather than experience himself? There were infidelities in the Mountjoy household that he lodged with, and there are suggestions of great loves lost in Shakespeare's life – tantalising question marks like Anne Whateley, who may have been supplanted by Hathaway, and Henry Wriothesley, to whom he dedicated the two Ovid-inspired poems and possibly addressed some of his sonnets. Shakespeare had an extraordinary range of understanding and perception when it came to writing people, relationships and their scenes, and he may well have been retelling the stories he had picked up throughout his life. Either that or his lost years were more exciting than we think. As Shakespeare writes: "Until I know this sure uncertainty, I'll entertain the offer'd fallacy."

The available evidence points to a Bard who spends most of his life away from his love. He's been suspected of affairs because of unreliable evidence, but we can't say much for sure about his lust. We know he spends most of his time at his desk, writing in the evenings. It raises the question, would Shakespeare have written the works if his own romance had overpowered his desire to become a playwright? He retired in 1611 with cash and land to spare, and went home to Stratford-upon-Avon to be with his family. Had he stayed there after he and Hathaway had their twins, he would have turned out an entirely different man. He might not have met the right people for an entry point into the theatre, forged the connections he did as he rose through literary society and established his fame, and so might never have played at the Globe in his own plays. Perhaps it was Shakespeare's own tragedy that Anne Hathaway remained a distant wife throughout most of his life, or perhaps the tragedy had something to do with his sonnets. Regardless of how little we know about his personal life, though, we can be sure that Shakespeare knew more than a thing or two about love.



A procession of characters from Shakespeare's plays, of which almost all have some element of romance in the plot

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SECRETS OF THE AZTECS

A civilisation now lost in time, the ancient Aztecs were masters of science and technology, creating medicines, machines and mega-structures unsurpassed on Earth

Written by Robert Jones



Despite being isolated within the deep, dark, unforgiving jungles of Central America, for over 300 years the ancient Aztecs defied their reputation as blood-obsessed barbarians by pioneering many of the scientific and technological advances we take for granted today. What's more, they did so across a broad range of fields, from astronomy to medicine, hoarding their acquired knowledge within huge libraries of codices that contained the secrets to the vast and impressive society they had built.

Unfortunately, much of this knowledge was lost forever when the Spanish conquistadors of Hernán Cortés brought the civilisation to their knees in the early-16th century, with these supposedly heretical texts burned en masse. Luckily, a few records of Aztec scientific knowledge survived and today historians are working tirelessly to unlock their secrets. Read on to discover some of their most impressive scientific knowledge.

Marvelous mathematicians

Buried deep within the Codex Vergara (a cadastral manuscript) lies a wealth of information about Aztec mathematics, which has now been decoded and revealed to be a vigesimal system rather than our decimal system in use today. The Aztec vigesimal system uses 20 as its base, with written dots equating to one, hyphen-style bars equating to five and various other symbols accounting for 20 and multiples thereof. According to the Vergara, as well as other codices, this system was employed for tax purposes, which was largely based on land owned, as well as for commerce, with quantities of produce traded with precision thanks to the creation of hard rules for addition, subtraction, division and multiplication. Of all the pre-Columbian peoples of Central America, the Aztecs were the most accomplished mathematicians, using a unique numbering system for arithmetic, record keeping and even in a taxation system for Tenochtitlan and the surviving lands.

Land was also measured mathematically, with a selection of algorithms utilised to calculate area, the most basic being the multiplication of length by width, while multiplying the averages of two opposite sides by an adjacent side used for irregular shapes. Land was measured in terms of 'land rods', which was the standard Aztec unit of linear measurement, measuring in at 2.5 metres



THE AZTECS

Mexico, 14-16th century

Brief Bio

The Aztecs were a Nahaltl-speaking people of Mesoamerica who grew to dominate the entirety of Mexico during the 14th, 15th and 16th centuries. While their origin is unsure, recent evidence suggests the culture grew out of a tribe of hunter-gatherers occupying the northern Mexican plateau prior to the 12th century. Their capital city, Tenochtitlan, was founded on Lake Texcoco and it remained the heart of their empire until the Spanish invasion of Hernán Cortés led to its collapse in 1520.

THE AZTEC ALPHABET

How did this ancient civilisation advance the written word?



If you needed any other evidence of the advanced state of Aztec learning then analysis of the society's alphabet seals the deal. The Aztec alphabet was split into three different sections, utilising pictograms, ideograms and phonograms. Pictograms were symbols representing exactly what they were, so a snake pictogram would mean 'snake' and be pronounced 'snake.' On the other hand, phonograms were pictures representing sounds, a lot like the vast majority of alphabets today, with letters representing specific sounds that words can be constructed from.

The Aztec alphabet contained four basic vowels and a large selection of consonants including cu, hu and ch. Finally, ideograms were the most abstract part of the alphabet, consisting of symbols that represented an entire idea. For example, a footprint symbol in the Aztec alphabet represented a journey or passage of time, so would frequently be used to depict the movements of famous people in stories.



The Aztecs used their alphabet to record information about their cities and culture



The Aztecs were a highly advanced civilisation

"By harnessing the secret knowledge of the celestial cycles, the Aztecs could use astromony to track the length of a solar year"

(8 feet) in length. For measurements under a land rod, a variety of other symbols including arrows, hearts and hands were used for indication. This level of mathematical precision also stretched into other areas, such as construction, which was one area where the Aztecs were most advanced in terms of technological prowess.

Kings of construction

As can be seen in the 'El Templo Mayor' boxout, the Aztecs became specialists at building stepped pyramid temples and public buildings, cutting, carving and hauling vast stone blocks and arranging them with exact geometrical precision. They were also excellent house builders, with even the poorest commoner typically living under human-made shelters, with the average dwelling measuring in at approximately 20 square metres (215 square foot) in the capital city of Tenochtitlan. Due to their environment, Aztec houses tended to be built on elevated platforms crafted from wattle-and-daub, with codices indicating that they stood approximately 40 centimetres (15 inches) off the surface. This was particularly important in the swampy city of Tenochtitlan. Walls were constructed from wooden frames and then filled in with stone, sand, lime and clay with adobe bricks - sculpted from a mixture of water, sand and clay - very common.

Roofs ranged in both design and construction materials, with both flat-pole and peaked roofs widespread and everything from straw through to wood and bricks used. Judging from excavated evidence as well as the information deciphered from surviving codices, a selection of construction tools were utilised in each build, ranging from cutting tools such as knifes and axes through to trowels and picks, with additional carvings undertaken if the house's patron was particularly wealthy. Important nobles would often have their dwellings painted, with the Aztecs using natural plant and animal ingredients - such as beetles, eg the cochineal species containing red carminic acid - to create coloured dyes and paints. Buildings were arranged within a city in terms of importance, which relied largely upon the Aztecs' mastery of astronomy.

Awesome astronomers

As revealed in the Aztec Codex Mendoza, Aztec priests and nobles were accomplished astronomers, accruing and storing the knowledge of deciphering

THE AZTEC CALENDAR

Understand this unique time-keeping system now

The Aztec calendar consisted of a 365-day cycle, referred to as a 'year count', and a 260-day cycle, referred to as a 'day count'. Together, these two cycles formed a 52-year century or 'calendar round' for the civilisation, with the former based on the movements of the sun and the latter based on religious belief. The year-count cycle consisted of eighteen 20-day months, with a separate five-day period at the end that was considered unlucky. The day-count cycle consisted of twenty 13-day periods referred to as trecena, with each trecena attributed to a different god.

While it is obvious that many parts of the their calendar system were inaccurate, the fact that the Aztecs could harness their advancements in astronomy and mathematics to create a calendar that was so close to an Earth year while deep in the isolated jungles of central America, is a remarkable feat. Furthermore, despite the Aztecs' religious calendar being centred on mythological deities, many of its aspects are based on scientific study of the Earth's environment and atmosphere. A good representation of the Aztec religious calendar – the cycle referred to as the day count – can be seen in the Aztec calendar stone, a massive 3.7m (12ft) in diameter, 24-ton ornate sun stone that once held great importance in the ancient civilisation of the Aztecs. The stone, which demonstrates the Aztecs' advanced understanding of geometry, is broken down into constituent parts in the diagram to the right.



Days
Surrounding the elemental and sun gods lie graphical representations of the 20 days in the ritual cycle, which are commonly referred to as day signs. These range from animals, such as rabbits and deers, to abstract concepts such as death and movement.

Sun
At the centre of the stone calendar lies a depiction of the Sun, which here is shown with the face of the Aztec sun god Tonatiuh. Its positioning indicates that everything revolves around the Sun. Tonatiuh's golden hair represents the Sun's colour.

Rays
Distinguishable from the sun itself, these V-shaped carvings depict the Sun's rays, which light up the numerous days of the calendar.

Flames
Circling the calendar's perimeter is a ring of flames, depicted as the flaming tail of a pair of fire serpents, which were referred to as Xiucoatl. Along with the Sun, these were thought to fight their natural enemies of night and the Moon.

Elements
Surrounding the Sun are four gods, three of which represent the elements of fire, water and wind. The fourth is the jaguar god Ocelotonatiuh, which in an indirect way represents the passage of time, with the god associated with the most remote cosmological epoch.

the night sky for centuries and handing it down through generations in isolation from the wider world. Records show that as well as being capable of accurately tracking the movements of celestial bodies such as the Sun, Moon and other planets - which they accomplished by placing sets of crossed wooden poles along their site lines - they utilised that information to create a religious and solar calendar as well as orientate their key structures along equinoctial lines. For example, the Templo Mayor of Tenochtitlan was aligned so that on the spring equinox (21 March) the Sun rose directly between its two top-mounted shrines, with ceremonies held there in dedication of it.

From their ability to navigate by the position of the stars, through to their creation of solar calendar and onto their construction of temples in perfect alignment so that the Sun's rays shone focussed on their summit during the equinox, the Aztecs were truly expert astronomers. Astronomy was practised primarily by Aztec nobility and priests, with the latter using dedicated observatories within temples to track the movements of celestial bodies.

By harnessing the knowledge of the celestial cycles, the Aztecs could also use astronomy to



Much of what we know about the Aztecs is from their own writings and records

track the length of a solar year and lunar month, as well as determine the duration of Venus's orbit and the prediction of any solar or lunar eclipses. According to depictions in Aztec codices, they also became extremely skilled at timing the appearances of comets and asteroids and often marked such occasions with ritualistic events.

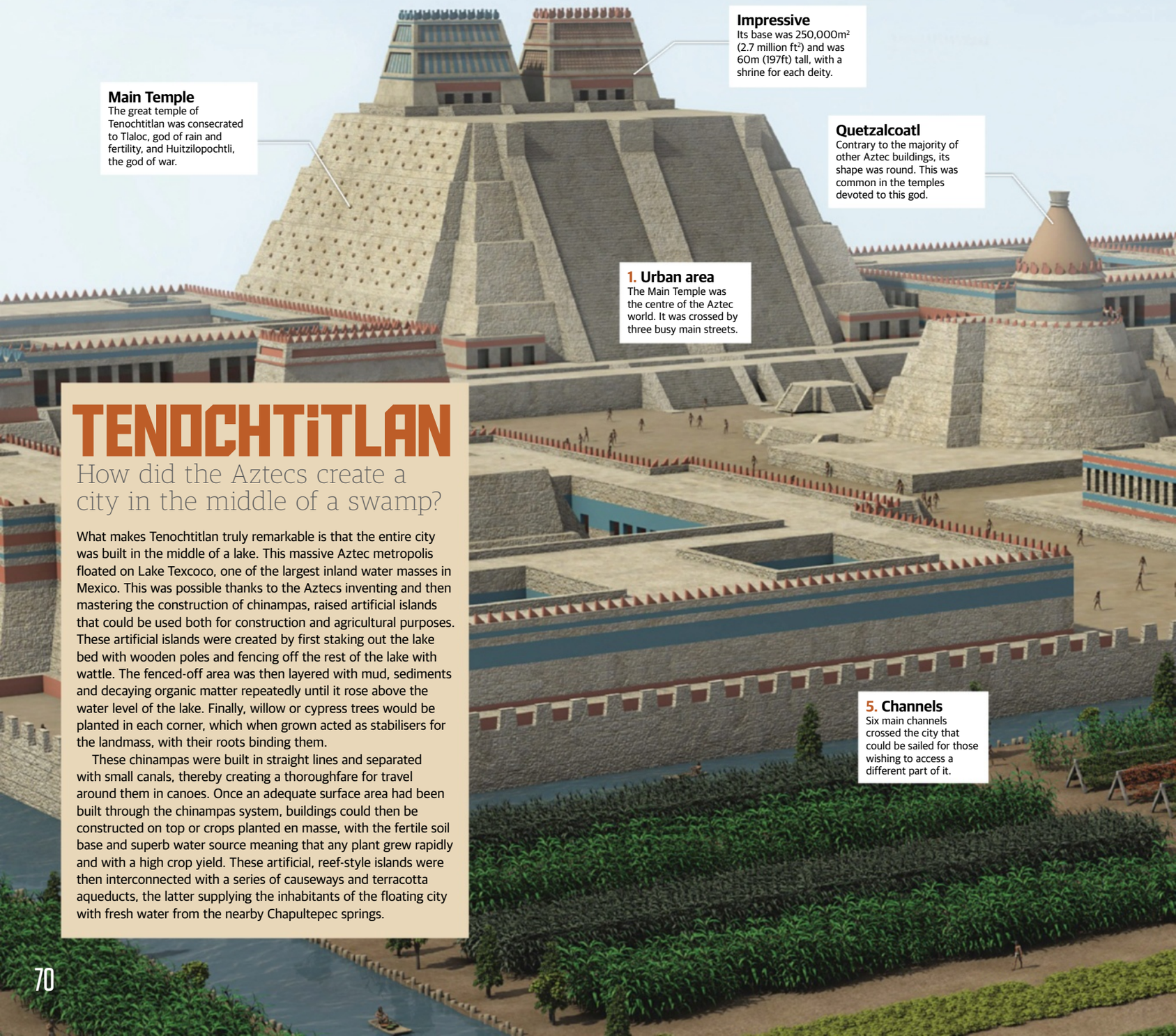
Of course, the most practical everyday application of Aztec astronomy was in their construction of a calendar, which included both a 365-day annual solar calendar as well as 260-day divination calendar (for a detailed explanation see 'The Aztec Calendar' boxout). The former calendar was physically manifested in Tenochtitlan as the Calendar Stone, displayed so that all could keep track of the passing of time.

Formidable farmers

One area where the Aztecs utilised their scientific and technological ingenuity to maximum effect was in their farming practices. Living in and around large swamps and lake-heavy areas of Central America, the Aztecs designed and employed terracing and artificial island systems to ensure crops had optimal land area to grow. They built aqueducts and dug channels to ensure crops were irrigated, and crafted their own tools and basic farming machines for crop planting and harvesting. The most common crop grown by the Aztecs was maize (corn), but due to their mastery of the art many other crops such as squashes, beans, avocados and guavas were delivered.

With their largest city-state of Tenochtitlan built in the middle of Lake Texcoco and housing north of 200,000 people, a large and consistent food supply was necessary for the Aztecs. Their mastery of irrigation and the chinampas construction system meant that vast fields of produce were grown all-year-round, with maize, beans, squash and much more grown with a frequency unsurpassed on the continent.

The Aztecs also harnessed knowledge of nutrition, specifically in terms of the health of soils and water when used to grow crops. Indeed, the Aztecs operated one of the most advanced crop-rotation systems ever created: their knowledge that certain crops deplete the land of specific nutrients was used to ensure soils were always cycled for a new type of produce, granting



TENOCHTITLAN

How did the Aztecs create a city in the middle of a swamp?

What makes Tenochtitlan truly remarkable is that the entire city was built in the middle of a lake. This massive Aztec metropolis floated on Lake Texcoco, one of the largest inland water masses in Mexico. This was possible thanks to the Aztecs inventing and then mastering the construction of chinampas, raised artificial islands that could be used both for construction and agricultural purposes. These artificial islands were created by first staking out the lake bed with wooden poles and fencing off the rest of the lake with wattle. The fenced-off area was then layered with mud, sediments and decaying organic matter repeatedly until it rose above the water level of the lake. Finally, willow or cypress trees would be planted in each corner, which when grown acted as stabilisers for the landmass, with their roots binding them.

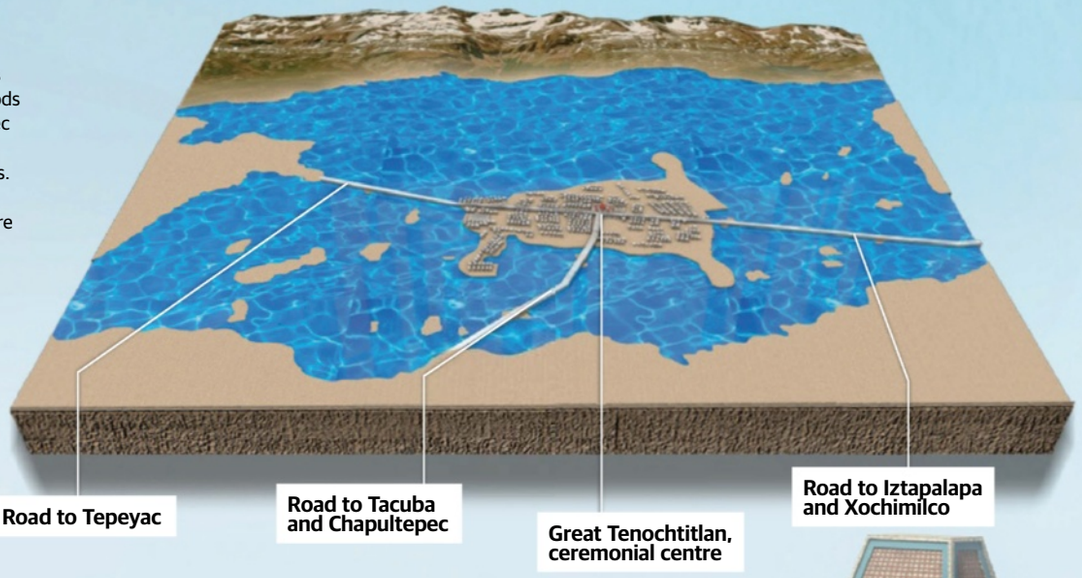
These chinampas were built in straight lines and separated with small canals, thereby creating a thoroughfare for travel around them in canoes. Once an adequate surface area had been built through the chinampas system, buildings could then be constructed on top or crops planted en masse, with the fertile soil base and superb water source meaning that any plant grew rapidly and with a high crop yield. These artificial, reef-style islands were then interconnected with a series of causeways and terracotta aqueducts, the latter supplying the inhabitants of the floating city with fresh water from the nearby Chapultepec springs.

GREAT TENOCHTITLAN

Towards 1325, the Aztec settled in the region of the Texcoco lake, south of Mexico valley. They built the city of Tenochtitlan on a long islet that reached a population of more than 200,000 inhabitants, the double of any European city of the time. The city was enlarged towards the nearby islands. It was divided into four neighbourhoods where the twenty clans or calpulli, that grouped the Aztec families, were distributed. Each calpulli was relatively autonomous; it had its own temples, schools and markets. Tens of canals crossed the city sailed by 50,000 reed boats every day and crossed by wooden bridges that were removed at night.

Location

The capital above the Texcoco lake

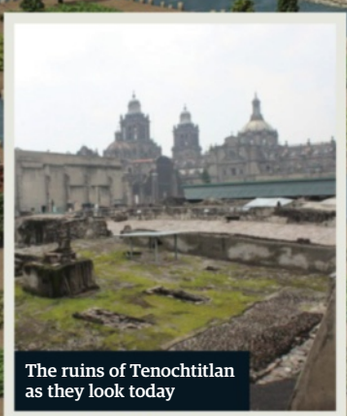


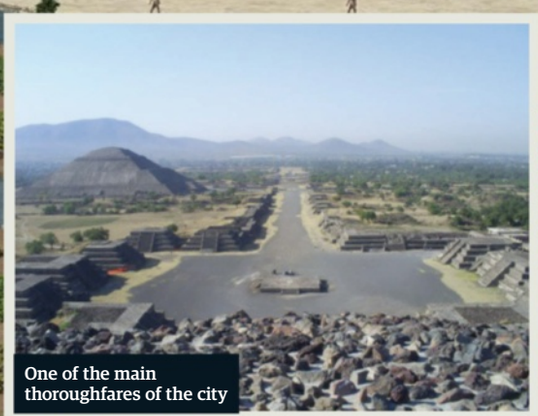
2. Tlatelolco
This great open-air market was divided into sections for different products.

3. Roads
The city was accessed by four roads. The biggest one was 13 km (8 miles) long and 20 metres (65 ft) wide.

4. Houses
Most of dwellings in the city were simple, single-storey houses. They were very different from the large and imposing temples.

6. Chinampas
These were artificial floating gardens that served to grow a variety of produce, including corn, pumpkins, pepper, cocoa, beans, apples, tomatoes and vanilla.


The ruins of Tenochtitlan as they look today


One of the main thoroughfares of the city

"Aztecs granted prestige to the position of doctor and encouraged them to study the human body and potential remedies"

it time to recover. Further, specific crops were partnered with ones ensuring a nutritional balance within the planting area, with the combination ensuring that farms maximised crop yield for every square metre of land used. The Aztecs also grew many herbs within their systems, with these used in another specialist Aztec science; herbology.

Masters of medicine

Aztecs' understanding of medicinal science was incredibly advanced for the time. In a period where most western nations were still addressing illnesses with either prayer or misguided placebos, Aztec civilisation granted prestige to the position of doctor and encouraged them to study the human body and potential remedies in depth. Among these studies, those of plants and their medicinal effects were central, from which Aztec doctors fashioned antispasmodic medications capable of preventing muscle spasms during surgery, according to codices such as the Codex Barberini, commonly referred to as the 'Aztec Herbal.' This was primarily achieved through the use of the passion flower. Other inventions included organic paste painkillers, liquid rubber for curing earaches and ground obsidian for the sealing of wounds.

Aztec physicians became the most skilled herbalists in the world, thanks to their in-depth study of the human body and their environment. Indeed, along with the establishment of hospitals, Aztec doctors were encouraged to undertake research, studying the effects of plants grown in large communal gardens. On top of this scientific approach, Aztec doctors accrued significant general medical knowledge that today we take for granted, including that people should not look at eclipses to prevent against vision damage, steam baths could cleanse the skin and sinuses and that specific foods were better for the human body than others.

These vast banks of knowledge allowed the Aztecs to scientifically and technologically surpass many of Earth's other ancient cultures, and in a fraction of the time, with the Mesoamerican peoples taking mere centuries to build a society the others – such as Ancient Egypts – took thousands of years to build. The secrets of science that they uncovered have, on the whole, withstood the test of time, with salvaged knowledge from the ancient culture leading to further developments in their field and contributing greatly to the sciences as they exist today.

How do we know this?

Our information about the Aztecs comes from a combination of surviving Aztec documents, such as the codices Borbonicus and Boturini, which were written by Aztec priests, Spanish reports on the Aztecs from their conquest of the region in the 16th century, and excavated archaeological evidence. Of the sources, the primary Aztec codices are the most useful, with rich details about their calendar, rituals, ceremonies and tradition derived from them. Unfortunately, codices from pre-conquest Mexico are few in number due to the Spanish burning many of them when they took over, so today decoding what few codices remain is crucial to furthering our understanding.



EL TEMPLO MAYOR

How did the Aztecs build this most awesome of citadels?

Originally constructed in 1325 and then added to and extended six times afterwards, the massive Templo Mayor citadel of Tenochtitlan was surely one of the wonders of the ancient world, towering over the Aztec city state's other structures at close to 30 m (90 ft) in height. Indeed, by the time it was eventually sacked and destroyed by the Spanish conquistadors of the 16th century, the pyramid temple consisted of four steep sloped terraces topped with a great platform measuring 80 x 100 m (262 x 328 ft), with a further two sets of stone stairs leading to a pair of grand shrines. Every part of the temple was decorated with carvings and surrounding it lay a vast stone-slabbed precinct that measured 4,000 m^2 (43,000 ft^2) filled with balustrades and further decorative aspects. Not bad considering it was constructed by slaves and working-class craftsmen under the direction of a ruling class of learned architects and mathematicians.

Indeed, El Templo Mayor was arguably the culmination of the advanced construction techniques mastered by the Aztecs over their civilisation's tenure in Central America. From the sculpting of vast blocks of stone from dedicated quarries for its terraces – the Aztecs were the first culture to industrialise this process in Central and South America – to utilising scaffolds and rope lifts to transport men and tools up its structure and onto the expert craftsmanship that allowed them to carve vast ornamental dragons and mix polychrome paints to decorate the temple's exterior, El Templo Mayor became the temple of temples. Indeed, if it were not for the sudden obliteration of their society by the Spanish conquistador Hernán Cortés, who knows how much higher and more complicated their temples could have grown?

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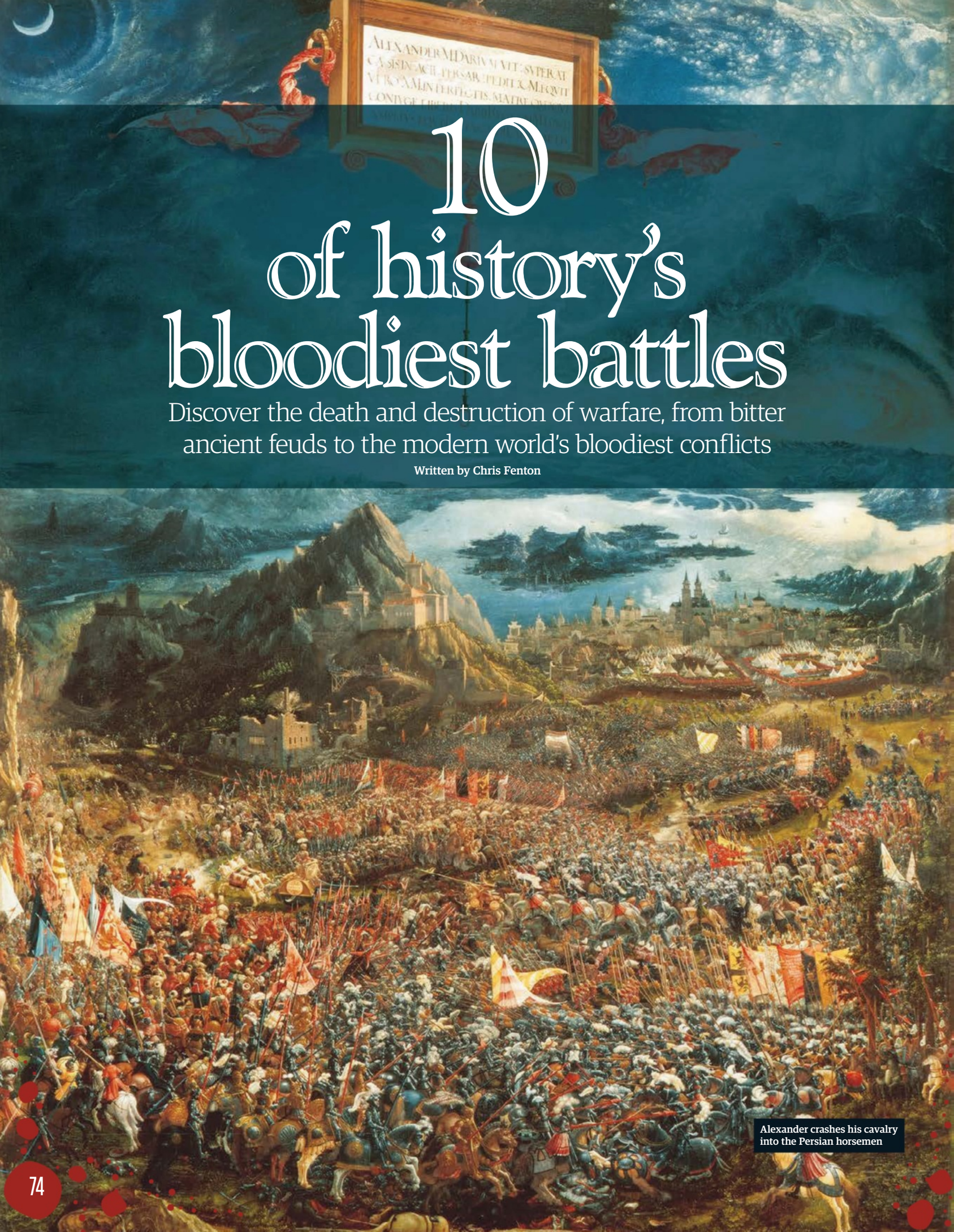
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10 of history's bloodiest battles

Discover the death and destruction of warfare, from bitter ancient feuds to the modern world's bloodiest conflicts

Written by Chris Fenton



Alexander crashes his cavalry into the Persian horsemen

Be it for feuds, gold, honour or to set men free, warfare has survived as the single most enduring human endeavour in history. While intellectual advancement has cured disease, built vast metropolises and created a truly globalised world, the pursuit of war has not diminished nor has its lethality to the men and women compelled to fight them. Relentless warfare fought by opposing states has created an ever more urgent drive to harness doctrine and technology to create dominance on the battlefield; be it Rome's heavy infantry cutting through barbarian hordes, the mounted knight running down hapless medieval infantry, siege engines levelling Renaissance cities or highly disciplined musket-armed infantry wiping out Napoleonic armies.

In the modern age, the ability to utilise sophisticated technology to simultaneously conquer the land, sea and sky has given militaries unparalleled dominance on the battlefield. Of course, technology and doctrine alone does not win conflicts, as the Swiss military writer Antoine-Henri Jomini wrote: "The superiority of armament may increase the chances of success in war, but it does not of itself win battles." The increasing use of technology has created the need for better trained, better motivated troops, the hapless conscript fighting for his lord has been replaced with the fit seasoned professional willing and able to fight and keep fighting until the end.

Warfare has also captured the imagination of learned individuals who have studied the 'art' of waging war, developing endless volumes of text on how to inflict the maximum amount of destruction on the enemy while limiting friendly losses to an acceptable minimum. These men, be they philosophers, poets, politicians and psychopaths, have all been driven either by the promise and adventure of glorious warfare or by a patriotic need to defend their homeland. The words of Sun Tzu, Machiavelli, Clausewitz, Liddel Hart and many others have taught and inspired generals to victory and they have also acted as a benchmark on how war should be practised, even to this day. Throughout all of these developments have been the war leaders themselves, the men who have commanded the battlefield and led men to eternal glory or disgraceful defeat using the finest weaponry their nations can muster. Despite the progress of industry and technology in creating ever more sophisticated weapons there has never been an advancement that has stopped one simple truth; that in war humans kill and are killed.

In this article ten of history's bloodiest battles are presented to show this undeniable truth. Each article has a summary at the bottom in which casualties are the closest approximations available and include those that have been killed as well as wounded. Some of the battles featured have been fought for greed, ambition or the desire for conquest. All of them have been remembered for the destruction and devastating loss of life that they caused.

The Battle of Issus 333 BCE

Alexander the Great's stunning victories throughout the 3rd century BCE united an empire that stretched from the deserts of Egypt to the frontiers of India. Originating from Macedonia in northern Greece, Alexander's ambition to build his father's empire into a world-leading power plunged the whole of the eastern Mediterranean and Persia into unrelenting warfare. The Battle of Issus started his great campaign in the east, defeating the Persians in the open field and opening up the endless landmass of Persia for Alexander and his vast army. It was a battle noted for its savagery; Alexander was an uncompromising war leader who would accept nothing less than total victory when his armies were in the field.

His victory stemmed from his use of terrain, his well-trained and equipped hoplites and the poorly disciplined Persian hordes that were assembled against him. Alexander lined his hoplites in the centre, facing the enemy across a river while positioning his cavalry on his two flanks. Darius, the Persian leader, assumed that Alexander's flanks were his weakest point and launched a full-scale cavalry assault on the left wing. Alexander ordered his cavalry positioned on his left to hold their ground while his hoplites and the Persian infantry slogged it out in the centre. Both the hoplites and the cavalry managed to hold the Persians back, creating a dangerous stalemate.

Alexander then saw that his best chance for victory was a cavalry charge on the Persian right and crashed his cavalry into the Persian cavalry on his side, breaking their line and forcing Darius to break and run. Rather than pursue, Alexander wheeled his cavalry round and charged again into the backs of the Persian infantry. Spears and shields broke under Alexander's onslaught and the invincible armies of Persia were trampled into the dirt by the weight of his cavalry and the shields of his hoplites. With the central position lost, Darius sounded a retreat and was cut down, spreading panic through the Persian ranks. As the Persians fled, Alexander rallied his cavalry one last time and pursued the Persians until dusk, butchering them as they fled.

COMBATANTS
Macedon **Vs** the Achaemenid Empire
CASUALTIES
Macedon: 7000
Achaemenid Empire: 20,000
LEGACY
Alexander marched into Persia and brought about the collapse of the Persian empire. He also married into the Persian royal family, cementing his hold in the Middle East.



The Battle of Malplaquet

11 September 1709

The Battle of Malplaquet was fought to the thunderous sound of cannon and the crescendo of musket fire. An alliance of countries, which included Great Britain, Prussia, Austria and the United Provinces (the Dutch Republic), went to war to secure Europe from encroaching French control of Spain and her vast overseas empire.

The battle that formed part of the War of Spanish Succession represented one of the bloodiest clashes of the whole campaign. It was also the most lethal engagement fought that century. The body count of the alliance forces and French forces numbered into the tens of thousands as gunpowder, cannon fire and heavy horse turned Malplaquet field into a bloody slaughterhouse.

The French allowed the alliance forces to come on to them, giving them the advantage of defence, cutting down the Austrian and Dutch troops that were trying to flank them. In the end, the French positions on the flanks were overwhelmed but not after thousands of alliance men lay dead through the intense barrage of firepower that confronted them. The British then smashed the French centre affecting a rout, allowing British cavalry to storm in and mop up the survivors. Despite the alliance carrying the day the casualties sustained by their troops meant that they could not go after the fleeing French forces; there simply weren't enough men to action a proper pursuit. This allowed the French to live to fight another day.

COMBATANTS
Great Britain, Austria, United Provinces, Prussia **Vs** France and Bavaria

CASUALTIES
The alliance: 21,000
France and Bavaria: 11,000

LEGACY
Malplaquet saw the use of musket on a large scale, convincing commanders it was easier to hold positions than it was to attack.



The British charge into the French centre

The Battle of Towton

29 March 1461



The Battle of Towton fought in a snowstorm

Known as the bloodiest battle ever fought on English soil, this was one of the climactic engagements of the War of the Roses. Fought in the freezing fields of Yorkshire it pitted the House of York, who had captured the king and forced him to accept their dominance over the throne, against the House of Lancaster.

The Yorkists were outnumbered but their leader, Lord Fauconberg, ordered them to take advantage of the strong winds blowing towards the Lancastrians and use arrows to thin out their numbers. This had a devastating effect on Lancastrian moral, since their arrows could not reach the Yorkists because they were firing upwind.

The battle then descended into brutal hand-to-hand combat which lasted hours, staining the falling snow blood red. By its end, thirty thousand men lay dead on the cold Yorkshire field.

COMBATANTS
House of York **Vs** House of Lancaster

CASUALTIES
House of York: 10,000
House of Lancaster: 20,000

LEGACY
With the Lancastrians defeated, the Yorkist control of the throne was secured with Edward being made king in June 1461. He was the first Yorkist king of England.

"The battle then descended into brutal hand-to-hand combat which lasted hours, staining the falling snow blood red"

The Siege of Baghdad

29 January - 10 February 1258

By 1258 the Mongol horde had swept from China through Persia and was threatening the Middle Eastern kingdoms of the Islamic caliphates. Behind them was a trail of destruction, slavery and horrifying stories of unbeatable mounted warriors on small warhorses laying waste to civilisation wherever they saw it. Bagdad sitting as a golden oasis in the middle of the Arabian desert was too much of a tempting target for the Mongol ruler Hulagu Khan to pass up. Assembling the largest Mongol horde ever committed to the field in one place, nearly one hundred and fifty thousand men, Hulagu raced to Baghdad and laid siege to it. The Mongols choked off the city's supplies and then began building siege engines to destroy the walls.

Baghdad's ruler, Al-Mustai'sim was convinced that the Arab world would not suffer the ignobility of his great Islamic capital falling to the barbarians, but he overestimated his standing in foreign affairs and was left to face the horde alone. As the situation became desperate, he sent out cavalry to confront the Mongols, underestimating how adaptable and resilient they were when confronting enemy cavalry. The Mongols had laid a trap, flooding a ditch and so trapping their enemy between the water and the horde and they butchered the defenders to a man before continuing the siege, destroying defensive walls and taking the outskirts of the city. While the defenders fought valiantly there simply wasn't enough of them to stop the horde's wave attacks.

Eventually, Al-Mustai'sim tried to offer terms to the Khan but his offers were refused, the city was sacked and its population was raped and murdered. The level of devastation the Mongols brought was horrifying; some estimates have put the number of civilians killed between two and eight hundred thousand. Thousands of civilians were run down and killed as they fled - there was no quarter from Hulagu's men. Before the Mongols, Baghdad was a centre of learning and culture, its grand library the envy of the Western world. Now the city lay in ruins, its streets choked with corpses and Al-Mustai'sim's people dead or enslaved. The Mongols marched away, leaving nothing but charred ruins.

COMBATANTS
The Mongol Empire **Vs** Abbasid Caliphate

CASUALTIES
The Mongol Empire: minimal
Abbasid Caliphate: 50,000 soldiers and up to 800,000 civilians

LEGACY
The Mongols secured the whole Arabian desert after the siege but were eventually forced to retreat east after in-fighting.



An ancient depiction of the siege with the Mongols positioned around the walls building siege engines



The battle was settled on the water

The Battle of Red Cliffs

201 CE

In this epic battle that went down in Chinese folk history as the story of few standing against many, two warring Chinese factions faced off against each other to decide the fate of a country. The allied forces of the southern warlords Liu Bei and Sun Quan stood against the numerically superior forces of northern plains warlord Cho Cho who wished to unite the empire under his tyrannical rule.

Bei and Quan knew they would have no chance against Cho Cho in a fair fight and that cunning was required. They initiated battle across the Yangtze river where Cho Cho's fledgling navy was vulnerable. After a small skirmish Bei and Quan pretended to surrender, sending capital ships down the river to negotiate terms. However, instead of a peace offering, Cho Cho's entire fleet was destroyed as the ships turned out to be skiffs loaded with flaming kindle. As thousands of his soldiers and sailors burned to death, Cho Cho was forced to retreat, handing victory to the southern warlords.

COMBATANTS
Liu Bei and Sun Quan's army **Vs** Cao Cao's army

CASUALTIES
No firm estimates but the battle involved nearly a million men with thousands of deaths on both sides

LEGACY
Red Cliff ensured that China would not become a single nation under one ruler.

The Battle of Leipzig

16-19 October 1813

With over six hundred thousand troops involved, the Battle of Leipzig was the biggest engagement of manpower committed to a battle before World War I. It was fought for pride and empires, as Napoleon Bonaparte plunged Europe into total war to build his dynasty in the Germanic hinterland. Against him stood a collection of nations determined to resist his dictatorial will, including Prussia, Sweden, Russia and Austria in a grand coalition.

They met in the fields surrounding Leipzig for an epic showdown that killed over a hundred thousand men. Napoleon's plan was simple: destroy the huge army the Coalition had assembled piecemeal, as he had done in previous campaigns through the unity of his Grande Armée. On the first day this appeared to be working, two bloody engagements against Austrian and Prussian troops resulted in Napoleon commanding the small town of Leipzig and much of the surrounding countryside. However, Napoleon failed to follow up on these victories and allowed the two armies to regroup and receive reinforcements from the the other armies of the Coalition nations. On 18 October the largest engagement ever fought in the 19th century took place.

Napoleon had retreated back to Leipzig and was determined to hold at all costs, but the French troops were now trapped and being hammered by endless Coalition infantry assaults. The only way out was to fight to a bridge leading westward to the safety of France. Seeing his men being slaughtered through the sheer weight of the Coalition's numbers, Napoleon ordered a strategic retreat to the bridge which was now being threatened by the Coalition's advance. In the ensuing panic a frightened French corporal blew the bridge up after he thought the Coalition was going to take it, just as the French soldiers were retreating over it. The explosion flew hundreds of hapless soldiers into the air and stranded thousands more in Leipzig. In the ensuing chaos, Napoleon made it to the western bank to safety and stayed long enough to watch his army completely disintegrate around him. It was the first time in his career that another army had inflicted such a defeat on him in the field.

COMBATANTS
French Grande Armée **Vs** The Coalition army

CASUALTIES
French Grande Armée: 60,000
The Coalition: 54,000

LEGACY
The Coalition was able to maintain the independence of the German region of the Rhine. Napoleon was forced back to France and eventually abdicated a year later.

"Napoleon had retreated back to Leipzig and was determined to hold at all costs, but the French troops were now trapped"



Prussian cavalry charge at the battle of Leipzig

The Battle of Salsu 612 CE

The Battle of Salsu holds the grisly reputation as being one of the most lethal open-field battles in military history. Fought by the Korean kingdom of Goguryeo against the invading armies of imperial China, the battle killed over three hundred thousand men within hours of commencing on the Korean northern plains. In 612 CE, Imperial China under the Sui dynasty was bent on expansion to secure its hold on domestic politics. It saw the small kingdoms of Korea as a perfect area for conquest, as the Koreans were traditionally seen as weaker in both military and political aspects by the Chinese.

Over a million Chinese soldiers marched into Korea to conquer its people and destroy the Goguryeo kingdom in the north of the country in one of the largest land invasions ever attempted by imperial China. The Koreans were not prepared to accept subjection to Chinese ambitions and fought an effective guerrilla war against the advance. The Chinese were constantly harassed by the retreating Koreans, who wore down their huge army, diminishing its moral and frustrating Chinese efforts to secure the Korean countryside. The Chinese eventually reached a shallow river north of Pyongyang where the Koreans had stopped running and stood to face their invaders.

Korean General Euji Mundeok knew he had no chance of winning a set piece battle against the invaders, so he harnessed the power of nature. The river the Chinese were crossing was dammed upstream, which meant the water was shallow, so Euji opened the dam just as the Chinese were in the middle of fording the river, creating a huge wave of water that rushed down the valley. The water moved so quickly that the Chinese had no chance to react - the whole area flooded, drowning the Chinese warriors in their bulky armour. What was left of the army struggled to recover itself before a huge Korean cavalry attack swept down on top of them, running down the hapless survivors. The Chinese had to retreat so quickly that many of the soldiers could not outrun the bloodthirsty Koreans, creating a trail of blood and death all the way back to the Chinese-Korean border at the Liadong Peninsula.

COMBATANTS
Korean kingdom of Goguryeo **Vs** Imperial China

CASUALTIES
Korean Kingdom of Goguryeo: minimal
Imperial China: 300,300

LEGACY
The Sui dynasty fell in decline through loss of manpower and was eventually replaced by the Tang. Goguryeo was left in peace.



Chinese soldiers in battle

The Battle of the Somme

1 July - 18 November 1916

In terms of body count, the Battle of the Somme represents one of the bloodiest slaughters in military history. The number of troops involved in the battle was staggering and so was the number of casualties. By July 1916, World War I had been grinding on for nearly two years without a breakthrough for either side. Trenches had zipped up the fronts of the Allied and Central Powers' armies with a treacherous no-man's-land in the middle where both sides fought to create progress.

Sir Douglas Haig, supreme commander of the British Army in the battle, was convinced he had the answer to this stalemate: a massive artillery barrage, the largest in the history of war, would literally blast the German army out of existence and bring the Allies an easy victory. Then all the Allied forces would have to do was stroll through no-man's-land and continue on to the destruction of the entire German military. His war-winning strategy was ambitious bordering on fanciful. There was little chance British artillery could lift all of the barb wire defending the German positions or clear all the German machine gun nests.

On the first day of the battle alone, the Allies lost seventy thousand men, killed and wounded for little or no tangible gains. Most of these casualties were sustained when Allied troops were 'strolling' through no-man's-land, only to be unceremoniously cut down by German machine-gun fire or blown to bits with artillery shells. While the attrition successfully wore down the Germans and eventually restricted their ability to wage war on other fronts, the massive and extensive battle still ended in a stalemate after nearly a million men had been killed.



British infantry advancing after the go signal, July 1916

COMBATANTS
British Empire and France **Vs** German Empire

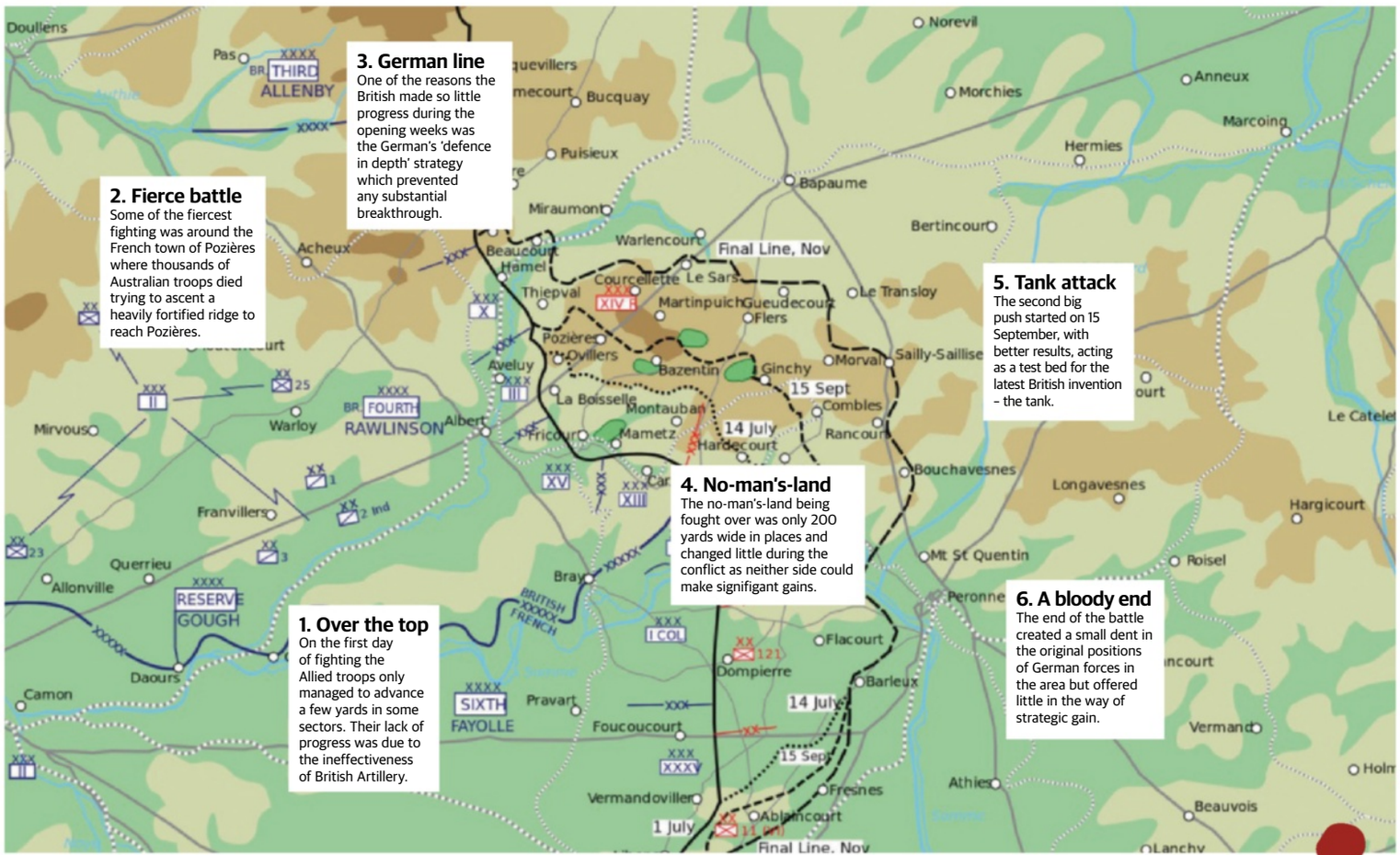
CASUALTIES
British Empire and France: 623,907
German Empire: 400,000-500,000

LEGACY
The tragedy of the Somme was that Haig learned the wrong lessons and became convinced the strategy of attrition was a successful one.



New Zealand infantry resting in a forward trench, September 1916

British machine gun team ready for the enemy



1. Over the top
On the first day of fighting the Allied troops only managed to advance a few yards in some sectors. Their lack of progress was due to the ineffectiveness of British Artillery.

2. Fierce battle
Some of the fiercest fighting was around the French town of Pozières where thousands of Australian troops died trying to ascent a heavily fortified ridge to reach Pozières.

3. German line
One of the reasons the British made so little progress during the opening weeks was the German's 'defence in depth' strategy which prevented any substantial breakthrough.

4. No-man's-land
The no-man's-land being fought over was only 200 yards wide in places and changed little during the conflict as neither side could make signifigant gains.

5. Tank attack
The second big push started on 15 September, with better results, acting as a test bed for the latest British invention – the tank.

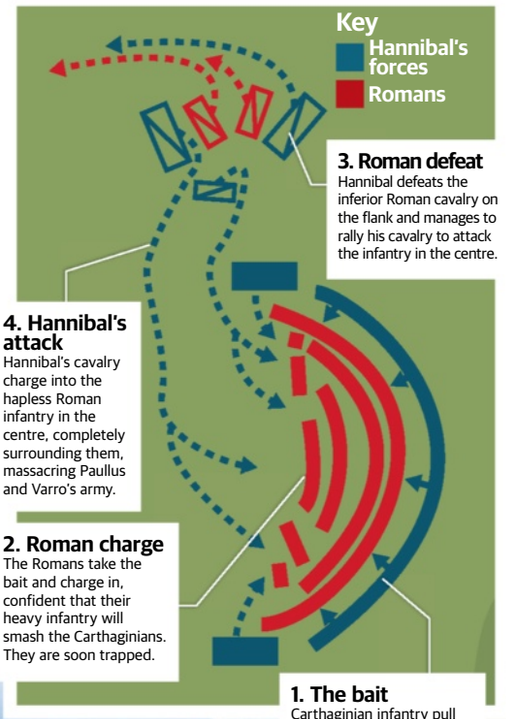
6. A bloody end
The end of the battle created a small dent in the original positions of German forces in the area but offered little in the way of strategic gain.

The Battle of Cannae 216 BCE

Cannae went down in history as the worst defeat ever experienced by the Roman republic and its war machine. Roman commanders Lucius Paullus and Gaius Varro were out-smarted and outmanoeuvred by Hannibal of Carthage who used the terrain, the strengths of his Carthaginian troops and the weather to turn the Apulian plain into a killing ground.

In 216 BCE Hannibal – considered by many to be one of the greatest ever military tactician – had crossed the Alps and conquered large parts of Italy and many of the Roman cities within the peninsula had defected to his side to the extent that his armies were threatening Rome itself. The Roman republic decided that enough was enough; Hannibal would have to be confronted. Paullus and Varro were elected to lead an army to defeat him and restore the honour of Rome. Varro was ambitious, overconfident and anxious to defeat Hannibal and claim victory for himself at the expense of his co-commander. When he met Hannibal's army at Cannae he had nearly forty thousand men behind him and saw no reason to wait and allow Hannibal to slip through his fingers.

Varro lined up his men in a deep formation of heavy infantry designed to smash the Carthaginians and drown them in the Aufidus River that was behind Hannibal's army. However, in his haste for a quick victory he left his flanks dangerously exposed to envelopment and Hannibal seized this opportunity. He quickly attacked the Roman flanks with his better-trained cavalry and told his infantry in the centre to pull back slowly, baiting the Roman infantry to march forward exposing their flanks. As the Romans marched further into the enclosing semicircle Hannibal's men surrounded them and hacked the Romans to pieces. The Romans were hemmed in so tightly they could not bring their heavy shields up to properly defend themselves and they were slaughtered. Some did escape, literally having to cut their way through the Carthaginian horde that had them surrounded. However, most died huddled together in Hannibal's trap, as the ancient Greek scholar Polybius wrote: "As their outer ranks were continually cut down, and the survivors forced to pull back and huddle together, they were finally all killed where they stood."



"The Romans were hemmed in so tightly they could not bring their heavy shields up to properly defend themselves"

COMBATANTS
Hannibal of Carthage **Vs** Roman republic

CASUALTIES
Hannibal of Carthage: 5,700
Roman republic: 77,700

LEGACY
With Cannae won, Hannibal continued his drive into Italy until he was eventually stopped by a massive mobilisation of Roman forces that drove him back to Africa.

The Romans suffered the worst defeat they had ever known at Cannae

The Battle of Stalingrad

23 August 1942 - 2 February 1943

In the grim concrete nightmare of Stalingrad a titanic clash of mechanised military might unfolded, engulfing the city and the whole of southern Russia in a cloud of ash and smoke. It was a battle that decided the fate of the Soviet Union and the future of Hitler's lebensraum in western Russia. Hitler's obsession with taking Stalingrad in the southern Volga defied strategic sense; the city bore little strategic value other than a tractor factory and the name of his greatest adversary - Stalin. Regardless of this he insisted the city was taken, to weaken the moral of the Soviets and presumably end the war on the Eastern Front for good.

The Soviets were in disarray for much of the struggle and at one point only controlled a narrow edge of the city centre with their backs to the Volga river - Nazi victory seemed certain. However, time was on the Red Army's side with German supply lines stretched to the limit and cold weather cutting them off from re-supply. Stalin had also brought up another weapon; his best field commander, General Georgi Zhukov. Hard-drinking and foul-mouthed, Zhukov was the type of bullish uncompromising leader that the Red Army needed to defeat the fascist invader. By November 1942, Zhukov had put a plan in motion to relieve Soviet troops in Stalingrad and encircle the German sixth army. Codenamed Operation Uranus, the Soviets smashed through the German lines at their weakest, where Romanian troops were stationed, and effectively encircled the German troops around Stalingrad, cutting them off from the rest of the German army in Russia and making them vulnerable.

The Red Army in the city was told to hold on at all costs and create a living hell for the Germans. This was achieved through endless sniper attacks, booby traps and constant attrition charges on German lines. As one German NCO put it: "Factory walls, assembly lines, the superstructures collapse under the storm of bombs ... but the enemy simply reappears and utilises these newly created ruins to fortify his positions." General Paulus, the commander of the sixth army, radioed back to Germany to try and convince Hitler to allow him to pull back but the Fuehrer would not hear of it. Paulus was told to hold his position or die trying.

By February 1943, with most of his army either starving, suffering from late stage frostbite or dead, Paulus surrendered to the Red Army that had completely surrounded him. In Berlin, a mass rally was held to commemorate the heroic sacrifice of the sixth army - the fact that they surrendered was not broadcast in Germany. Stalingrad had been reduced to a tangled carpet of smouldering metal and concrete. In the words of one German officer just before the ceasefire: "Animals flee this hell ... only men endure."

COMBATANTS
The Axis (Germany, Romania, Italy, Hungary, Croatia) **Vs** the Soviet Union

CASUALTIES
The Axis: 850,000
Soviet Union: Approx. 1,150,000

LEGACY
The German army went into decline on the Eastern Front after Stalingrad, allowing the Soviets to take the offence.



Intense house-by-house fighting made up the majority of the engagements within Stalingrad

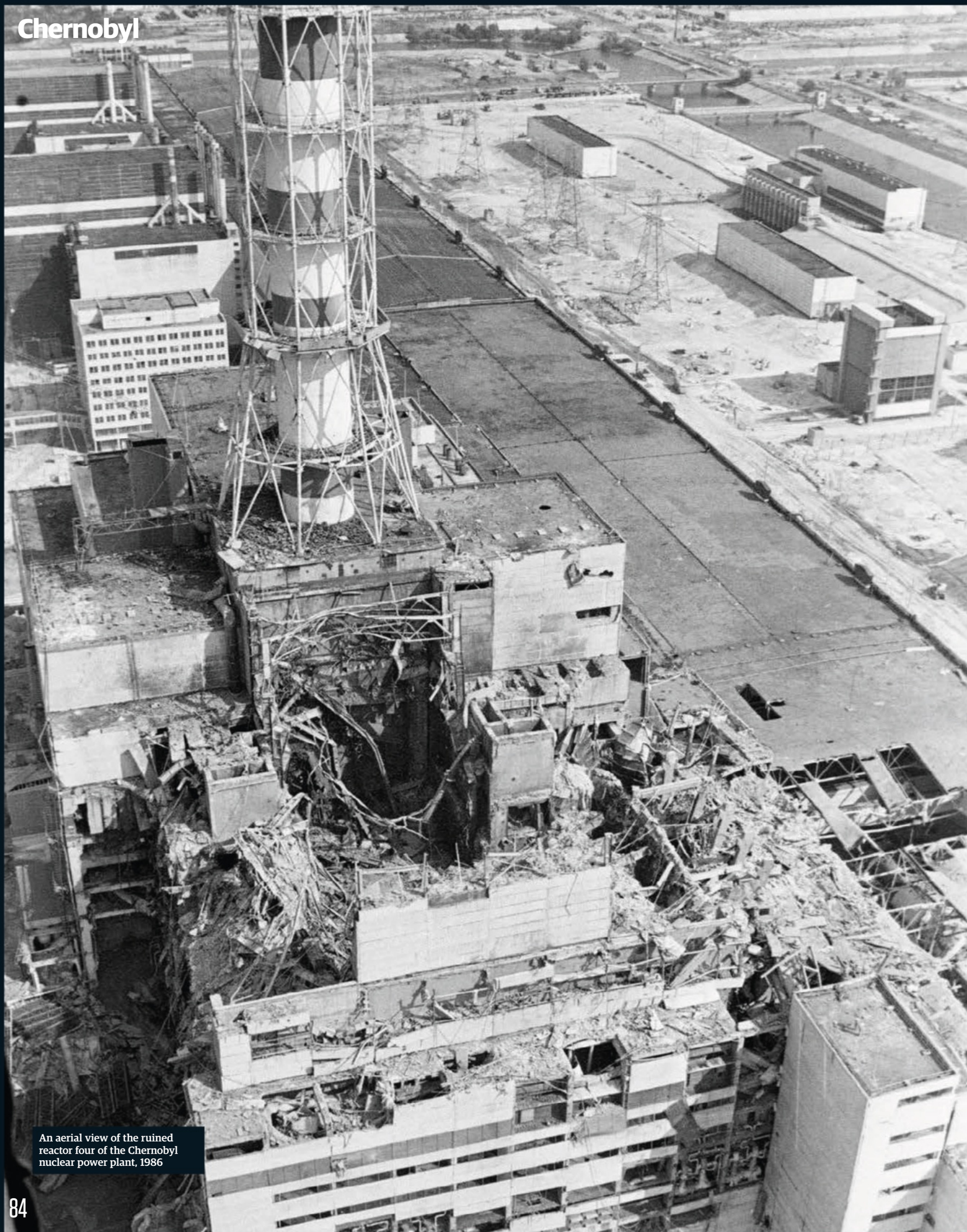


A picture of a well-fed Soviet soldier capturing a frostbitten German combatant



After months of fighting, Stalingrad is finally liberated. The red banner flies over what's left of its square

© Look and Learn/Alamy, Corbis



An aerial view of the ruined reactor four of the Chernobyl nuclear power plant, 1986

CHERNOBYL

A seemingly routine safety check led to the worst nuclear accident of the 20th century and helped bring about the end of the Soviet Union

Written by Andy Brown

The Chernobyl nuclear power plant is a large and imposing building, easily dwarfing the trees in the forest around it. To many this gargantuan industrial monster that spewed out smoke and power was a sign of the Soviet Union's ambitions. Situated in Ukraine (part of the Soviet Union until 1989), approximately 16 kilometres (10 miles) northwest of the city of Chernobyl, work began on the plant in the Seventies with the first reactor commissioned in 1977. By 1984 four reactors were active. Each reactor was capable of producing one gigawatt of electricity and the plant provided approximately 10 per cent of Ukraine's electricity. The Soviets weren't stopping there though. By 1986 two more reactors were being built, with ambitions to make Chernobyl one of the world's largest nuclear power stations.

The plant also provided a living for the local inhabitants and numerous people had moved into the region because of their work with the nuclear power station. In fact, the town of Pripyat had been built in 1970 to house almost 50,000 plant workers and their families, less than two miles from the sprawling power station. It may have looked industrial and ugly, but it was good for the region's economy and served as a symbol that the Soviets were as technologically advanced as any of the decadent countries in the west.

One of the men who earned their living from the plant was Aleksandr Akimov, a night shift supervisor. On 26 April 1986, he was in charge of a seemingly routine safety test on reactor four. In less than two weeks time he would be dead from severe radiation poisoning from the worst nuclear accident of the 20th century.

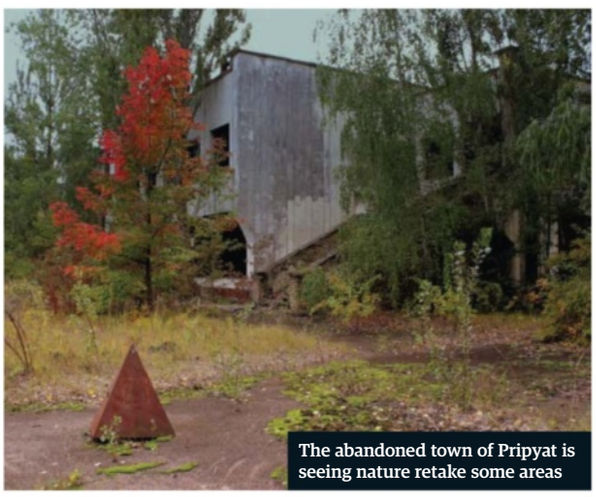
The plant may have been highly effective at generating power, but safety concerns had been raised. The four reactors were of the Soviet RBMK design, which produced both plutonium and electric power. This meant that they were different from standard commercial designs, as they employed a unique combination of a graphite moderator and water coolant. Adding to these safety concerns, the reactors were unstable at low power, primarily owing to control-rod design.

In 1986 the Soviet Union was an 'interesting' place. In five years' time its communist structures would come unceremoniously crashing down and the Soviet Union would be dissolved, leading to the biggest change in the country for a generation. However, at the time of the Chernobyl disaster, the old mechanics of government were still clinging on and the old adage, 'knowledge is power', was at the heart of the government's policies. There were those who were concerned – although given how seriously the Soviet administration took secrecy the numbers in the know were limited – that the Chernobyl plant did not have the massive containment structure common to most nuclear power plants elsewhere in the world. This meant that if an accident occurred, radioactive material would not be contained, but seep into the environment and cause untold damage to people and natural surroundings.

This secrecy ran not just to the knowledge held



This hotel in Pripyat has not seen guests since the accident in 1986


The abandoned town of Pripyat is seeing nature retake some areas

by other countries, but also to their own people. Aleksandr Akimov's superior at Chernobyl was Anatoly Dyatlov, deputy chief engineer. When the Soviet Union's authorities later tried Dyatlov, desperately looking for scapegoats, he stated that he did not know of the previous accidents that had occurred at reactors of the same type, even though several had. It may seem strange that the authorities wouldn't want those in positions of authority to possess all of the pertinent facts about the equipment they were working with, but such was the culture.

There are conflicting reports about the circumstances of the disaster, with some claiming that Akimov and other engineers were reluctant to carry out the test but were pressured into doing so by Dyatlov. The deputy chief engineer later countered this and said the atmosphere in the plant was normal and no one was anxious about the test proceeding. The test was to examine whether the reactor could operate under electricity generated by its own turbines and produce a backup source of electricity to keep the reactor going in the event of a general power failure. Several safety features that could have interfered with the test were deliberately turned off.



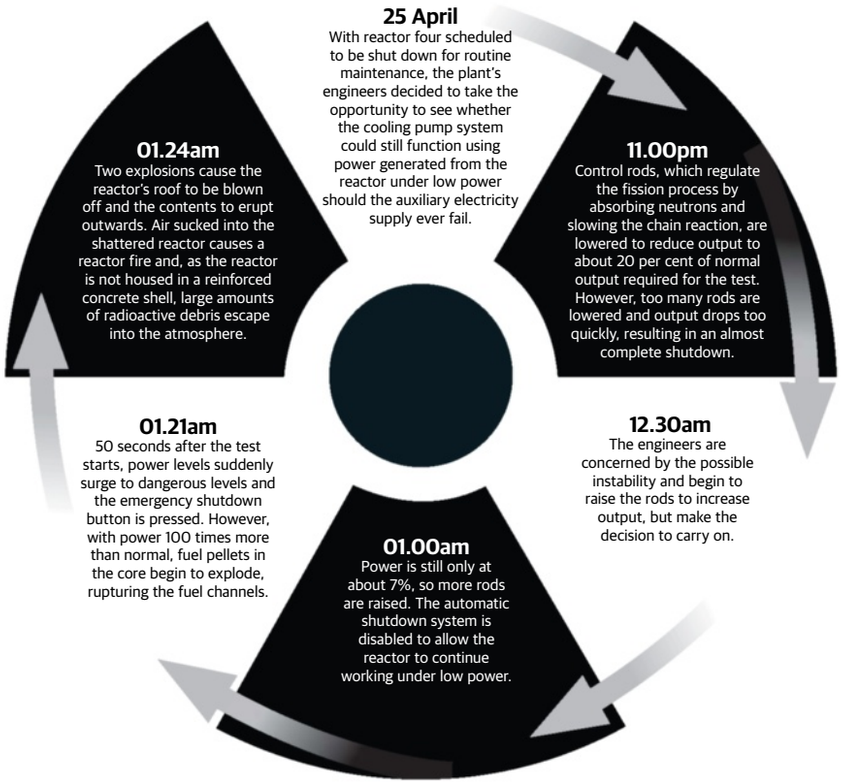
Ghost town

The town of Pripyat is located just 1.8 miles (three km) away from the nuclear power plant and had a population just under 50,000 at the time of the Chernobyl disaster. It was a growing town with 15 primary schools, five secondary schools, a hospital and sports and recreational facilities, including an Olympic-sized swimming pool. After the accident, residents were evacuated but told they could return in three days time, meaning that many possessions are still in the city to this day. Some residents have returned to the area, but none have been allowed back into the town, as it is still quarantined due to high levels of radiation.

The city is a historical monument to life in the Soviet Union in the Eighties: walls still display propaganda slogans and the houses and factories speak of a different era. In some parts nature is reclaiming areas, and in 2002 the city opened as a slightly macabre tourist destination for those willing to sign a waiver in case they die of radiation poisoning.

> "Parts of the exploded roof landed onto the roof of the still operating reactor three and several fires sprung up and began to dance"

Countdown to disaster



When the test began it quickly became apparent that something was wrong and the special button that triggers an emergency shutdown was pressed. Nothing happened.

In an interview later Dyatlov said of the incident: "I thought my eyes were coming out of my sockets. There was no way to explain it. It was clear this was not a normal accident, but something much more terrible. It was a catastrophe."

After only a minute reactor four's roof was suddenly blown off into the air, and radiation began seeping out of it. The dozen people in the control room – including Akimov and Dyatlov – were exposed to shocking levels of radiation and five of them died soon afterwards from radiation burns. The radiation levels in the worst-hit areas of the reactor building have been estimated to be 5.6 roentgens per second (R/s). A lethal dose is around 500 roentgens over five hours, meaning that some workers received fatal doses in less than a minute. Unfortunately for those working in the contaminated area, a dosimeter (which measures an individual or object's exposure to radiated energy) capable of measuring up to 1,000 R/s was buried in the rubble of a collapsed part of the building, and another one failed when turned on. All remaining dosimeters had limits of 0.001 R/s and simply read



An abandoned classroom in Pripyat, where everything was left behind in what was called a 'temporary' evacuation



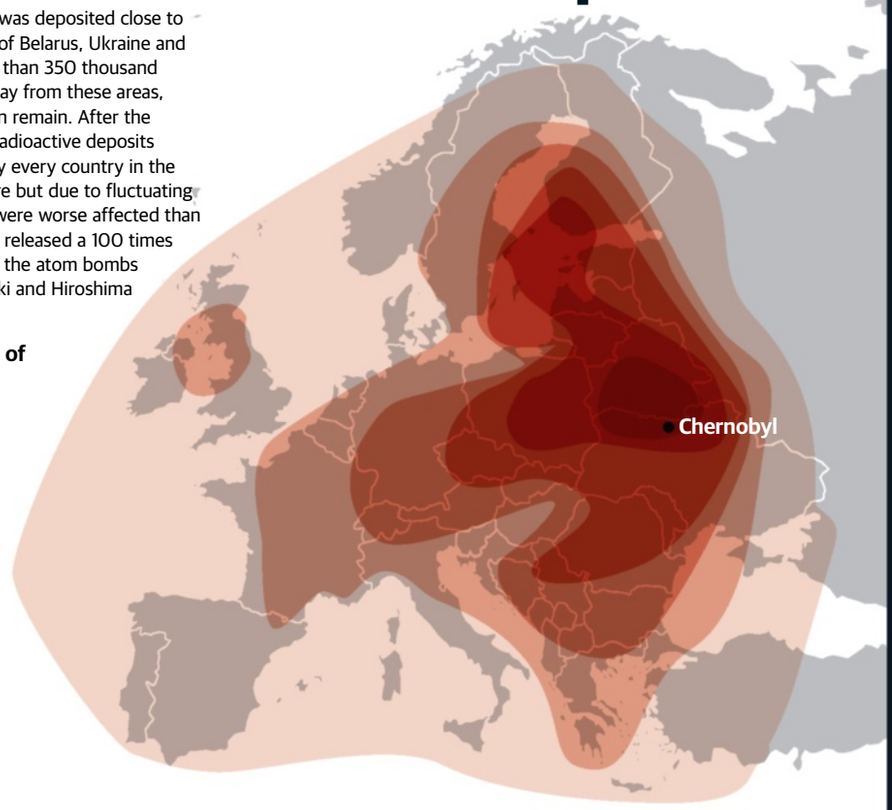
'off scale'. Therefore, the reactor crew could only ascertain that the radiation levels were somewhere above 0.001 R/s and did not have confirmation of the truth: that the radiation was life-threatening.

Due to these inaccurate low readings, Akimov assumed the reactor was intact – although to come to this conclusion he ignored the assorted pieces of graphite and reactor fuel lying around the building and the high readings of another dosimeter brought in that was dismissed as 'defective'. Whether Akimov really thought the reactor was intact or he knew the importance of averting further disaster is mere conjecture. What is fact is that he stayed with his crew in the reactor building until morning, sending members of his crew to try to pump water into the reactor and that none of them wore any protective gear.

The radiation leak wasn't the only danger. In flagrant disregard of safety regulations, a combustible material, bitumen, had been used in the construction of the reactor building and turbine hall's roof. Parts of the exploded roof from reactor four landed onto the roof of the still-operating reactor three and several fires sprung up, dancing on its roof. A Chernobyl Power Station firefighter brigade was first on the scene to try and extinguish the flames; with the main objective to douse the fires around reactors three and four, and ensure that reactor three's cooling system was kept intact to avert further disaster.

Radiation doses across Europe in 1986

Much of the fallout was deposited close to Chernobyl, in parts of Belarus, Ukraine and Russia, where more than 350 thousand people resettled away from these areas, but about 5.5 million remain. After the accident, traces of radioactive deposits were found in nearly every country in the northern hemisphere but due to fluctuating winds, some areas were worse affected than others. The disaster released a 100 times more radiation than the atom bombs dropped on Nagasaki and Hiroshima in WWII.





Health physicists in special suits controlling radiation in the fields of the Chernobyl disaster area



"I thought my eyes were coming out of my sockets. There was no way to explain it. It was clear this was not a normal accident, but something much more terrible"

One of the firefighters was Lieut Col Leonid Telyatnikov. In an interview with *People magazine* years later he recalled: "It was a clear night with lots of stars. I had no idea what had happened, but as I approached the plant I could see debris on fire all around, like sparklers. Then I noticed a bluish glow above the wreckage of reactor four and pockets of fire on surrounding buildings. It was absolutely silent and eerie." The firefighters managed to control the blast, but with none of them wearing any radiation protection it was inevitable there would be casualties, especially for those combating the flames on the roof. Six of the firefighters died following their exposure and many others suffered long-lasting damage. Still, it's hard to overstate the importance of their actions; an explosion in reactor three could have led to the destruction of all four reactors and the world would have faced a far greater disaster.

Further catastrophe may have been averted due to the bravery of the plant engineers and firefighters, but radiation was now leaking out of the plant on an unprecedented scale in modern history, and the Soviets' reluctance to share information – even when their citizens were at risk – would lead to further loss of life. The nearby city of Pripyat was not immediately evacuated after the incident and with the townspeople oblivious to events just down the road many of them fell ill and complained of a metallic taste in their mouth before suffering uncontrollable fits of coughing and vomiting. Soviet authorities started evacuating people from the area around Chernobyl within 36 hours of the accident and told the people who were forced to leave their homes that it was only a temporary measure and that they were safe in leaving behind any personal and materially valuable possessions. A month later all those living within an 30 kilometre (18 mile) radius of the nuclear power plant – over 100,000 people – had been relocated.

The actions of the local Soviet authorities in evacuating the surrounding area were slow, but they were positively proactive compared to the national response. The general population weren't actually informed of the incident until several days later, and even then it was a cursory 20-second announcement on a TV news program stating: "An accident occurred at the Chernobyl Atomic Power Plant and one of the reactors was damaged. Measures have been undertaken to eliminate the consequences of the accident." The only reason this statement was made was because of events occurring in Sweden.

On Monday 28 April, 55 hours after the explosion at reactor four, an alarm sounded at the Forsmark Nuclear Power Station in Sweden; high amounts of radioactivity were being detected and workers were evacuated. As the alarm sounded other nuclear power stations across Scandinavia also detected high radiation levels coming from an incoming nuclear cloud that had originated in the Soviet Union. When asked for an explanation, the Soviets Union's response was predictable; they denied anything had happened. It was only after the Scandinavian countries had announced the source of immense radiation that Moscow issued the statement above and admitted that something had occurred.



Gas masks left behind during the evacuation of Prypiat's primary school



Construction of the confinement arch for Chernobyl's reactor four won't be finished until at least 2015

A disaster still waiting to happen?

The effects of the Chernobyl disaster are still widely felt, with different agencies varying in their estimates of the amount of deaths it caused. The World Health Organisation put the figure at 4,000 whereas Greenpeace believe it is at least 10,000 and perhaps considerably higher. The economic costs have also been high, with Mikhail Gorbachev claiming the Soviet Union spent 18 billion rubles on containment and decontamination, virtually bankrupting itself, and costs are still ongoing. There are fears that because of these economic costs the world could be sleepwalking into another disaster.

The long-term plan for the containment of reactor four is the New Safe Confinement (NSC), a 20,000-ton steel arch intended to prevent any radiation leakage into the environment for the next 100 years. The structure will be 190 metres (623 feet) wide and more than 100 metres (328 feet) high. Initial plans were for the NSC to be in place by 2005 but recent reports suggest this will not happen until 2015 at the earliest. A hastily-built sarcophagus has sheltered the reactor since 1986 but there are genuine and serious concerns over its effectiveness.

Despite different governments pledging to help pay for the work to be completed, with the NSC currently eight years behind schedule there are those who fear that the work will never be finished and that the current sarcophagus will begin leaking dangerously high levels of radiation. Then Chernobyl will be the scene of its second nuclear disaster.



Around the plant action had been taken, even if it wasn't announced. The day after the incident, a government commission was set up and reactors one and two were shut down. A Soviet officer, General Pikalov, set out in a truck fitted with radiation apparatus and rammed through the closed gates to measure the radiation. He established that the graphite in the reactor was burning and that it was giving off an enormous amount of radiation and heat. Shortly afterwards, the government in Moscow was warned and the town of Pripyat evacuated but further mistakes were then made.

First, extinguishing water is added but the high temperature separates the water into hydrogen and oxygen and the resultant explosion releases heat. Thus, the fire is not extinguished but fanned. After three fruitless attempts to quell the flames with water, the authorities decide to throw sand, lead and boron carbide onto the reactor from helicopters. This causes the temperate to finally drop but all those in the helicopters died soon afterwards – of unrelated causes, according to Moscow. Ten days passed until the reactor core was fully extinguished.

With the fire out, those in power began looking for people to blame. To point the finger at substandard equipment would have been tantamount to admitting that the mighty Soviet Union lagged behind its world competitors in matters of technology or safety. No, it was far better to put the blame on human error. Over 25 members of the Communist Party were expelled for their 'role' in the disaster and six Chernobyl workers were accused of violating safety rules during experiments on reactor four. Dyatlov was accused of sending four subordinates to inspect the burning reactor without telling them of the radiation hazard. All of them were found guilty and given sentences varying from two years in a camp to 10 years in jail.

The government had their scapegoats but, just like the radiation leaking out of reactor four, the political consequences of the accident could not be contained and one of the consequences of the Chernobyl disaster was the demise of the Soviet Union. Mikhail Gorbachev had been the Soviet leader for just over a year at the time of the disaster and was embarking on a series of reforms, one of which was to decrease the withholding of information from the population by certain government agencies. Chernobyl gave him the chance to draw a line in the sand between the old and new eras in terms of communications and brought home to him the damage nuclear weapons would cause. He later wrote that this was a major factor in his decision to open a dialogue with the US about decreasing the number of nuclear weapons of both countries.

The disaster at Chernobyl caused great suffering but was also a turning point in the Soviet Union's history and ultimate dissolution. It proved that, towards the end of the 20th century, a Western government that seemingly cared so little for the safety of its citizens was no longer sustainable. As the last Soviet president, Mikhail Gorbachevh, himself later wrote: 'The Chernobyl disaster, more than anything else, opened the possibility of much greater freedom of expression, to the point that the system as we knew it could no longer continue.'

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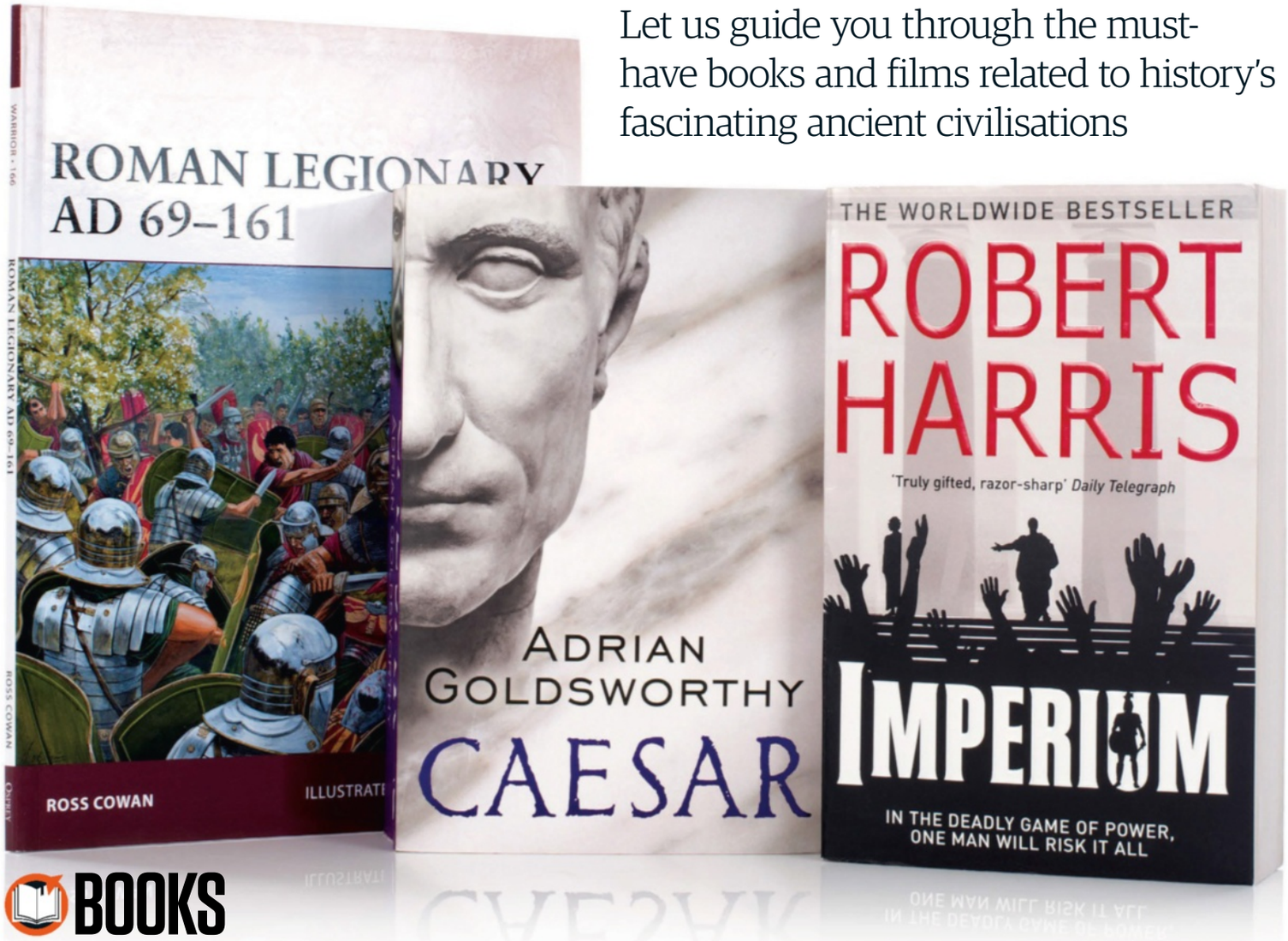
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Let us guide you through the must-have books and films related to history's fascinating ancient civilisations



BOOKS

MILITARY

For those looking for a real in-depth look at the Roman military, Ross Cowan's *Roman Legionary AD 69–161* provides a comprehensive look at the composition of Roman legions and how they changed during this transformative time. It's not easy reading and not suitable for anyone looking for some light entertainment, but perfect for those wanting to really get to grips with the subject and learn more about argubly one of the greatest military machines of all time.



If you like this try...

War in Ancient Greec **Bob Caruthers**

Relying on primary sources, the text covers the wars and battles between the city-states and the development and diversification of warfare in this time period.

BIOGRAPHIES

There's no shortage of biographies of the great figures of ancient times and Julius Caesar has more than his fair share of them. Adrian Goldsworthy's 2006 effort, *Caesar: Life of a Colossus* does an admirable job of setting Caesar in the correct context and not judging the man who many see as ending the Roman Republic in a modern light. Aside from the bedroom, many consider Caesar's greatest strength to be his military ability and his skills are appraised here.



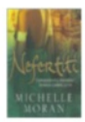
If you like this try...

Cleopatra: A life **Stacy Schiff**

Although frustratingly few bits of hard evidence are available, Pulitzer-winning biographer Schiff paints an engaging picture of the most famous female figure of her age.

FICTION

Considered by many to be one of the best historical fiction writers around, Robert Harris' books on Cicero in Ancient Rome, *Imperium* and *Lustrum* brilliantly bring to life both the master orator and Consul and the key figures of the day, such as Cato, Pompey and Caesar. The third book in the trilogy is scheduled to be the author's next and will include the tumultuous events that led to the end of the Roman Republic and one man's march to ultimate power.



If you like this try...

Nefertiti **Michelle Moran**

The novel tells the tale of two sisters raised by a powerful Egyptian family and is set against the backdrop of political and religious conflict in Ancient Egypt.

OVERVIEW

The Penguin Historical Atlas of Ancient Civilizations is illustrated with photographs, artwork recreations and full-colour maps. It explores the first farming settlements of Mesopotamia, via Egypt, Greece and Rome, to the other civilisations. Another good option for those looking to get an overview on this subject is *The History of the Ancient World: From the Earliest Accounts to the Fall of Rome*. The first volume in a new series, it connects historical events from around the world.

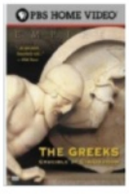


APOCALYPTO

Year: 2006
Directed by: Mel Gibson
Set as the Mayan kingdom faces its decline, the story tells the tale of Jaguar Paw, a young man who is captured and set to be offered as a human sacrifice. The film's visuals of the Mayan city are breath-taking, as is the pace of the action.

TELEVISION AND FILMS

EMPIRES: THE GREEKS



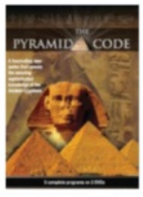
Year: 2000
Directed by: Cassian Harrison
This PBS television programme, narrated by acclaimed actor Liam Neeson, chronicles the rise and fall of the civilisation of Ancient Greece. It tells the fascinating story of Greek democracy from its first stirrings in 500 BCE to the cataclysmic wars that virtually destroyed the entire empire.

SPARTACUS



Year: 1960
Directed by: Stanley Kubrick
This movie classic tells the story of the Roman slave revolt in 73 BCE that threatened the very foundation of the great power. Giving Kirk Douglas his most iconic role, director Stanley Kubrick handles matters with the panache you would expect.

THE PYRAMID CODE



Year: 2009
Directed by: Carmen Boulter
Available on Netflix, this five-part series asks how the scientific understanding of the ancients was so advanced and looks at how ancient civilisations were able to complete amazing feats.

EDITOR'S PICK

The Generalship Of Alexander The Great is a biography of arguably the greatest military general the world has ever known with an additional focus by military historian J.F.C. Fuller on the battles that he fought. This is a thoughtful and in-depth account of the strategies and tactics used by the man who had conquered much of the known world by his death in 323 BCE.

"The film's visuals of the Mayan city are breath-taking, as is the action"

TOP 5 APPS

Ancient civilisation apps for when you're on the go

EGYPT TEMPLES



iPad+: iOS 4.1 | £1.99/$2.99

This app lets you explore Ancient-Egyptian temples through a mix of prose, photography, drawings and videos and presents a beautiful picture of what they might have looked like in their prime.

ANCIENT BATTLE: ROME



iPad+: iOS 5.0 | £1.49/$1.99

If you've ever wondered whether you could cut it as a Roman commander then this is the app for you. Commanding a force of legionnaires, elephants, catapults, heavy and light cavalry, archers, slingers and other unit types, you lead the Roman forces in classic battles and campaigns.

GREEK GODS



iPad+: iOS 4.0 | FREE

This app contains more than 360 different Greek gods and each reference comes complete with a record of their name, gender, category and their description. Perfect for those wanting to get up to speed on their Greek mythology knowledge.

ULTIMATE ROMAN QUIZ



Android: 1.6+ | £1.50 | $2.33
iPad+: iOS 5.0 | £0.69 | $0.99

If you think you are the ultimate Roman history buff, then this app is ideal for you. With 1,000 questions ranging in difficulty and across all aspects of Roman life, this app will separate the consuls from the plebs.

BRITANNICA KIDS: AZTEC EMPIRE



Android: 2.3+ | £1.24 | $1.99
iPad+: iOS 4.3 | £4.99

Encyclopædia Britannica's dedicated Aztec app, focussing on kids and teens, combines learning games with images and videos to create an entertaining way to engross yourself in the history of the Aztecs.

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AMAZING STORIES

African educator



Jessica Markwell, Newtown

My great-great-grandmother Anne was the daughter of Alexander Stephen (1795-1875), a wealthy Scottish shipbuilder, who had shipyards in Glasgow and Dundee. When Anne was 10, she embroidered a sampler on which she recorded the initials of her parents and 17 siblings. The sampler hung in our sitting room and I wondered as a child how it would have felt to have grown up with so many brothers and sisters.

Anne was married to a dishonest solicitor who was removed from the register of Scottish lawyers after embezzling a client's funds. From my mother I inherited a wicker box, filled with his old letters and papers. When I eventually looked through its contents, I found evidence that Alexander Stephen was a victim of blackmail.

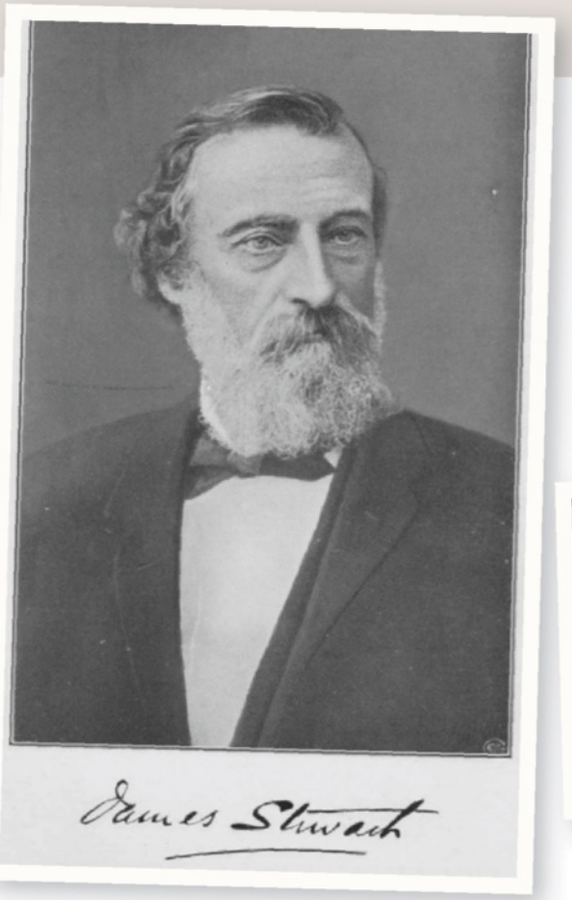
Wanting to know more, I began to research Stephen's ancestors. Among other intriguing facts, I learned that at just 18 years of age, Anne's youngest sister, Williamina, married a medical missionary called James Stewart. I discovered she had sailed with him to Southern Africa, taking with her a piano. After the couple had settled there in a simple house, a young Xhosa boy saw her crying as she played the strange instrument. Mina dried her tears when she saw the child, then gently asked if he knew where she could find a source of clean water.

The image of my great-great-aunt, so young and homesick, resonated with me, and I bought a biography of her husband called *Stewart of Lovedale*, published in 1908. I read the book with an increasing sense of wonder; James Stewart was immensely gifted and hardworking and achieved an enormous amount for the cause of African education, yet he has largely disappeared from history. The reason seems to have been that his reputation was damaged by his intimate relationship with Mary, wife of David Livingstone.

James Stewart was born in Edinburgh in 1831. As a teenager, he became fired with the desire to follow Livingstone, having read the explorer's Missionary Travels. He prepared himself by becoming a minister in the Free Church of Scotland and by qualifying as a doctor. At Glasgow Royal Infirmary, he won a prize for surgery, and worked with Joseph Lister, the 'father' of antiseptics.

He became a tutor to the Livingstone children and then traveled with Mary to the Zambezi, where they joined David Livingstone's expedition party. James had raised money in order to set up a cotton-growing industry in the area, but it soon became clear that this would be impossible and he left the Zambezi expedition disillusioned. After various adventures, he reached Algoa Bay, in what was then the Cape Colony. From there, he went on to visit a mission called Lovedale. The mission

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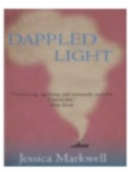


YOUR PHOTOS

school was run by a man called William Govan and had a 'colour-blind' policy; children of all races were taught alongside one another, and as James observed in his journal, there was absolutely no difference in the learning ability between the black local children and the white children.

It was 1863 and James had found his cause. He believed in education as a means of self-improvement and he also saw it as a means of ending slavery. Above all, he believed in racial equality. He returned to Lovedale three years later and dedicated the next 40 years to improving educational opportunities in Southern Africa. His dearest wish was for Africans to have access to a university with standards as high as Edinburgh, London or Oxford. He died having raised the money and secured a site for the University of Fort Hare, where Nelson Mandela later studied.

James Stewart's story is the subject of my novel, *Dappled Light*. While researching the book, I traveled to South Africa. High above Lovedale, on a hill called Sandile's Kop, we could see his monument, shaped like a lighthouse.



Dappled Light by Jessica Markwell is published by Matador, price £7.99, £3.99 eBook. It is available at www.amazon.co.uk.

Do you have family history that you want to share?

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Cold War warrior

James Hoare, Scunthorpe



I perhaps didn't appreciate this when I was first told about my father's National Service in the early Fifties (in fact I was disappointed he hadn't shot anyone or won any medals), but his experience placed him at the front line of the Cold War. Not a natural fit for the army, Donald Hoare was a softly spoken vegetarian (no mean feat for the era) and apprentice motor mechanic whose furthest journey away from his native Wakefield was a family holiday to Cleethorpes. Suddenly in 1951, at a tender 18 years of age, he was training in Richmond, South London, before being deployed to Neumunster, in what was then the shiny new Federal Republic of divided post-War Germany as part of the British Army of the Rhine (BOAR).

A driver and operator with 15th/19th The King's Royal Hussars, he was responsible for a Daimler Dingo armoured car, a characterful little four-wheel drive scout car that entered service in World War II. Named after battles in the regiment's past, this one was called Vitoria after the Duke of Wellington's decisive 1813 trouncing of Napoleon's French forces at Vitoria-Gasteiz in Northern Spain.

My father's experience was perhaps typical of a conscript in that era. He recalled cold barracks, endless drills, trips into the town to use his one and only piece of German skills ("Noch ein bier, bitte!" – "Another beer, please!"), standing guard with a block of wood in his holster instead of a gun and reporting 'enemy' movements over the wireless in manoeuvres – vast war games – in preparation for a confrontation that would thankfully never materialise. I was unimaginably proud as a small child (despite the lack of medals or war stories), and still am, if not more so as I understand and appreciate his experience better.

He would slide inside a stripped-out Dingo at the now-defunct National Army Transport Museum in Beverley, East Yorkshire to show me where he sat, and point out with some satisfaction the insignia of his training regiment – the skull and crossbones of the 17th/21st Lancers – on one of the tanks. Reading about the period now is sobering, though. Vastly outnumbered by the Russian and East German forces, the BOAR's real purpose was simply to slow them down so that nuclear weapons could be used. Their casualty rate would have been catastrophic and life expectancy measured in hours. This was two years after the Berlin Blockade and the foundation of NATO, one year on from the start of the Korean War between communist north and US-backed south, and the same year that Britain tested its first nuclear weapon. Knowing all that, I can scarcely wrap my head around how intense it must have been.

He hated his time in the army, but never forgot why they were there on Europe's new frontier, solemnly recalling a German luggage porter gripping his hand and telling him: "I'm glad you're here. If you weren't, the Russians would be."

Do you know anyone who served during the Cold War?

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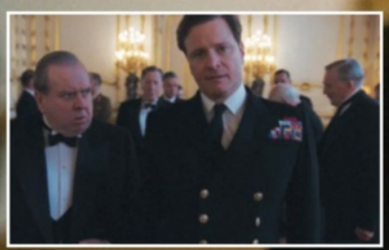
Fact versus fiction on the silver screen

THE KING'S SPEECH

King George may have mastered his stutter, but was the *The King's Speech* free of erroneous errors?

Director: Tom Hooper **Starring:** Colin Firth, Helena Bonham Carter, Geoffrey Rush, Guy Pearce **Country of origin:** UK **Year made:** 2010

WHAT THEY GOT WRONG...



01 The film implies that Winston Churchill and King George VI (Bertie) had a close and amicable relationship. In fact, the two disliked each other and Bertie thought Churchill was a warmonger while Churchill felt the king was within the foreign affairs 'appeasement camp.'



02 When Elizabeth, the future queen of England, visits Lionel Logue at some point in 1926, there is a picture in his apartment depicting the Sydney Bridge Celebration. The Sydney Bridge was still under construction in 1926.



03 Bertie's stutter is emphasised throughout the film as being a serious problem preventing him from leading the country at the advent of war. While the real king George did have a speech impediment, it was largely under control by the Thirties.



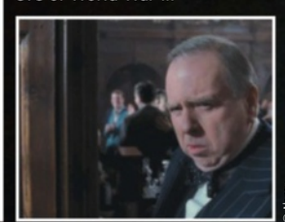
04 Elizabeth's dress style at Balmoral during the confrontation with Bertie's brother and Wallace Simpson was not in keeping with what she actually wore during this period. She only started wearing these colours in symbolic support for the Royal Air Force during the war.



05 The Logue boys are seen building and playing with plastic scale models of aeroplanes. Plastic was not widely available until the Fifties after it was made available for non-military use. In the Thirties it's more likely they would be made of wood.

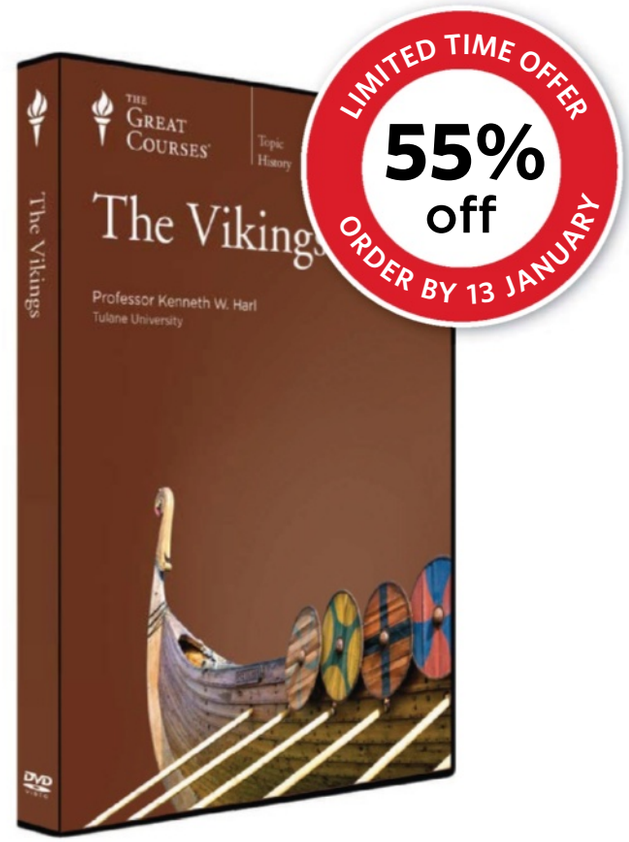
What they got right

Winston Churchill did suffer from a fear of making public speeches, which he admits to the king before Bertie makes his speech to the nation on the eve of World War II.



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THE BATTLE OF BRITAIN

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Spitfire Mkla and Messerschmitt Bf110

The summer of 1940 saw an epic battle in the skies over Southern England.

The RAF and Luftwaffe each fought to gain aerial supremacy over the other. The RAF fielded a formidable fighter force, the most famous machine in its arsenal being the Supermarine Spitfire. The opposing Luftwaffe also fielded a potent single-engine fighter, but it was the twin-engine Messerschmitt Bf110 with its longer range that often engaged the RAF over England.

Its longer range did not translate into fighting ability and it found itself under-powered and outclassed when compared to the nimble and potent Supermarine Spitfire.

Many 110s were downed and the Spitfire proved itself to be the most capable fighter in the air during the Battle of Britain.



610 Squadron, No.13 Group, RAF 1940



6 Staffel, I/Zestoregeschwader 76, 1940

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